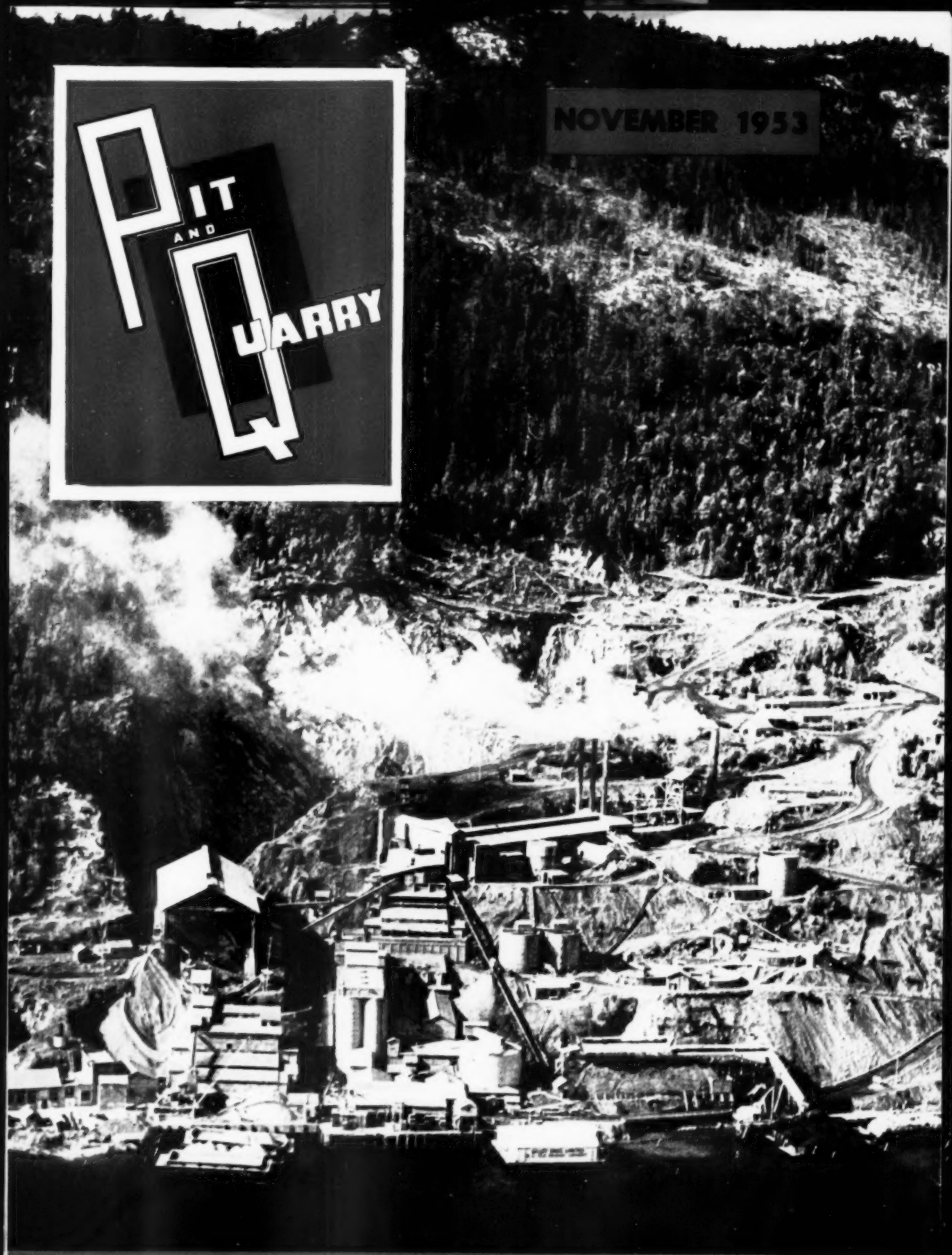
# PIT AND QUARRY

NOVEMBER 1953



Modernized Plant of the British Columbia Cement Co., Ltd., at Bamberton, B. C. (See page 84.)
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Flat Sewn Open Mouth

Sewn Open Mouth

Pasted Open Mouth

for made-to-order heavy-duty multiwall sacks

Flat Sewn Valve

Sewn Valve

Pasted Valve

**Dependable as a Source**
**Dependable as a Service**
for multiwalls of every type—2 to 6 ply, 1 to 4 color printing

# there is no substitute for kraft!

KRAFT means strength in paper—
and economy in shipping sacks.
KRAFT also means KRAFT BAG CORPORATION
—now in its 3rd generation of bag
making...and the dominant factor
in the manufacture of KRAFT-lok*
a new valve closure considered the
greatest contribution to the industry
since the L C Sleeve.
KRAFT-lok users report definite dollar savings
from production and packaging efficiency
that has amazed everybody in the business.
Other shipping sack manufacturers may soon
be offering bags with the KRAFT-lok principle...
But for the assurance of true KRAFT-lok
construction and performance, get the
story from us—or ask us to give you a
demonstration on your own packers.

Gilman PAPER CO.
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Complete integrated plants at Gilman, Vermont, and St. Marys, Georgia

## KRAFT BAG CORPORATION

Gilman Paper Company Subsidiary
630 Fifth Avenue, New York 20, N. Y. • Daily News Building, Chicago 6, Ill.

# WHAT ARE YOUR BEST BUYS IN TIRES ?

All-Weather, Sure-Grip—T. M.'s The Goodyear Tire & Rubber Company, Akron, Ohio

AREN'T they the tires that take your toughest jobs in stride? Those that show you more profits in more work well done? Those that live the longest, most useful lives—with minimum down time for *any* reason?

Here's why so many truck users say the best tire buy is a Goodyear:

Goodyear has built and sold 600 million pneumatic vehicle tires *alone*—more tires for more specific uses than anyone else on earth. That is because the public has learned from experience that Goodyear tires are standouts in all-round performance—*that Goodyears give you extra dependability, extra safety, extra mileage!*

So when you buy or specify Goodyear, you get all this EXTRA value without extra cost! Let your dealer prove it to you. Goodyear, Truck Tire Dept., Akron 16, Ohio.

*FOR EACH JOB, THERE'S A COST-CUTTING GOODYEAR TIRE!*

# GOODYEAR

**MORE TONS ARE HAULED ON GOODYEAR TRUCK TIRES THAN ON ANY OTHER KIND**


PIT AND QUARRY, November 1953, Vol. 46, No. 5. Published monthly by the Pit and Quarry Publications, Inc., 431 South Dearborn St., Chicago 5, Ill. Subscription price $3 for 1 year in the U. S. and possessions, Canada, Central and South America; elsewhere $3 additional for each year. Single copy 25 cents. Entered as second-class matter February 28, 1932, at the Post Office at Chicago, Ill., under the Act of March 3, 1879

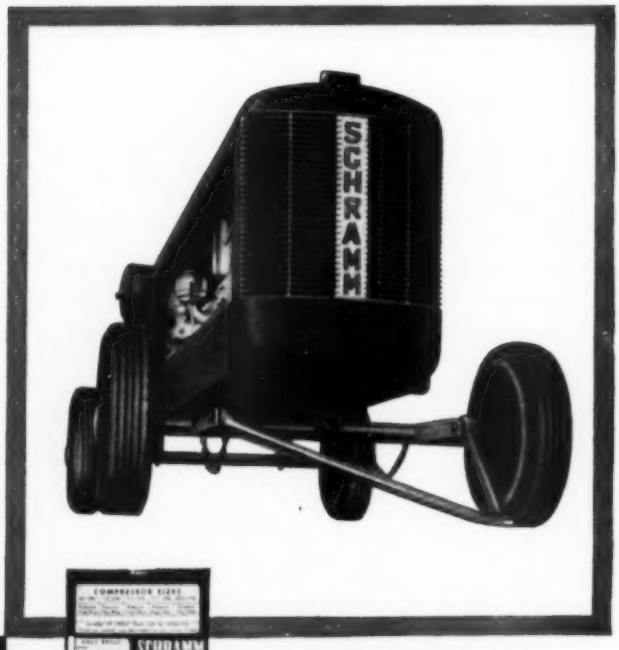
# GUARANTEED PERFORMANCE with SCHRAMM AIR COMPRESSORS AND TOOLS

Rock Drills D-55, D-45, D-45/60
Rock Drill D-20
Paving Breakers B-80, B-60, B-35
Sheeting Driver BSD-80, BSD-60
Trench Digger TD-25
Backfill Tamper BT-32
Wagon Drills WDR-126, WDR-45, WDR-55
Clay Digger CD-25
DeLuxe Pneumafeed Self-Propelled Wagon Drill

Schramm offers you a complete line of Compressors and Pneumatic Tools that embody all of the latest improvements in design and construction. Tools illustrated show only the general range included in the Schramm Golden Anniversary Line.

There are various sizes and types available to meet every requirement, including compressors ranging in sizes from 20-35-60-105-210-315-600 c.f.m. with Paving Breakers, Wagon Drills, Pneumafeed, Pneumajack, Pneumadriver, Rock Drills, Sheeting Drivers, Clay Spades, Backfill Tampers and a complete line of accessories including air hose and fittings, drill rods and detachable bits.

Write for Catalog 5350.




**SCHRAMM, INC.**

*The Compressor People*

WEST CHESTER • PENNSYLVANIA

**TOOL SELECTOR**

Here is a helpful way of determining tool capacities that removes all doubt and confusion in selecting the proper combinations for your job, no matter how large or small.

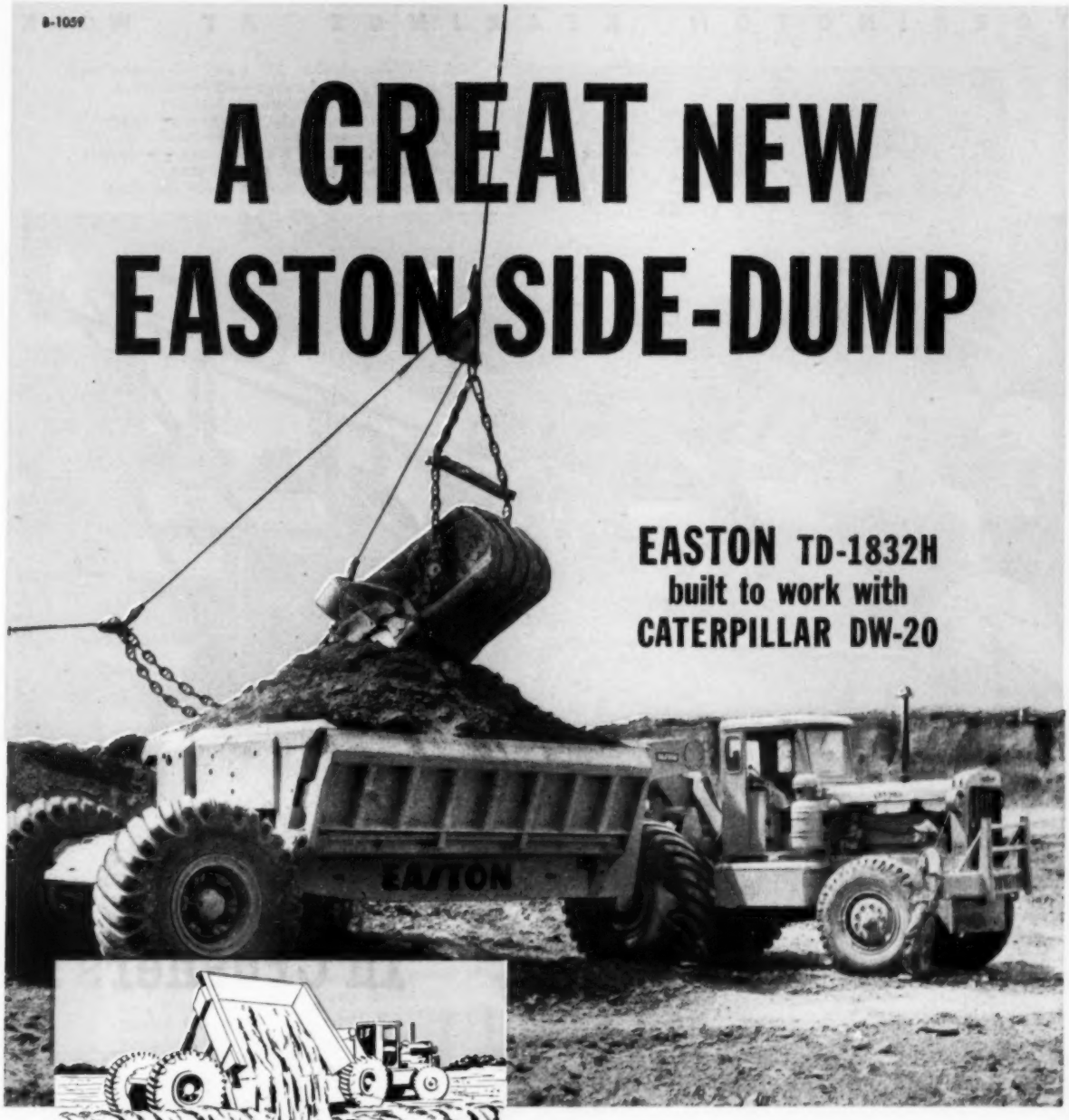
Sent FREE upon request.

Write on your business letterhead or enclose business card and address reply to SCHRAMM, INC., Dept. SMH, West Chester, Pa.

B-1059

# A GREAT NEW EASTON SIDE-DUMP

**EASTON TD-1832H**
**built to work with**
**CATERPILLAR DW-20**

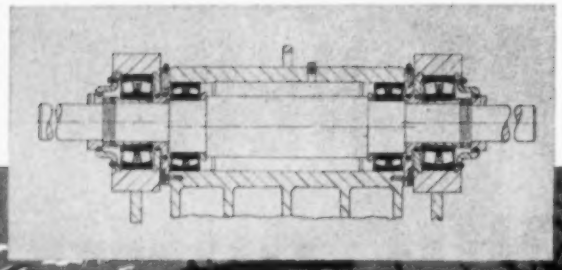



**Here is the trailer** that will change the whole picture of side-dump hauling in off-highway service. It's Easton's most versatile big side-dump... job-proved and ready for rugged all 'round service in earthmoving, mining and quarrying. Big single tires, low center of gravity, and outboard-mounted hydraulic jacks assure remarkable lateral stability even while dumping on the run. The big new TD is equally at home windrowing a 32-ton load of earth, or shuttling big loads of rock and ore. That means job-to-job versatility with all the advantages of side-dumping! Every feature of the Easton body, axle, and automatic door has been proved for dependability in the most rugged type of earth and rock handling service. Now available in 24 and 32 ton capacities. See your local Caterpillar Dealer for complete information.

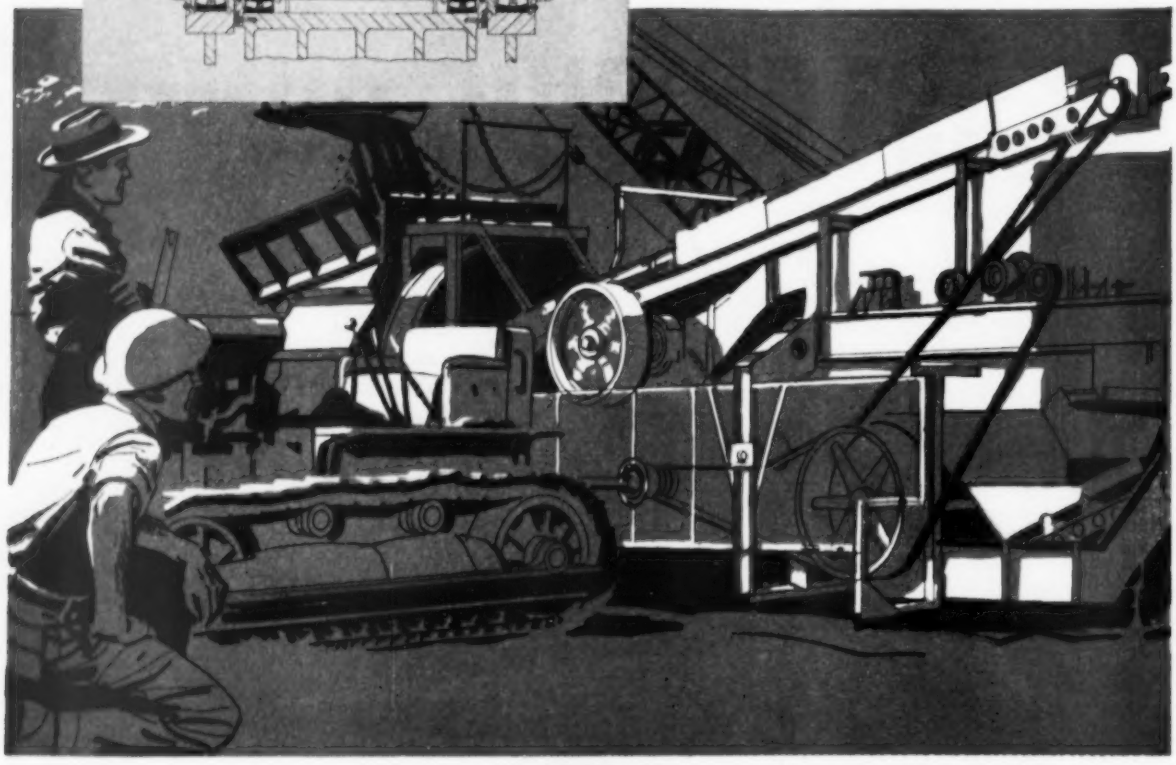
**Easton Car & Construction Company • Easton, Pa.**

**EASTON**®

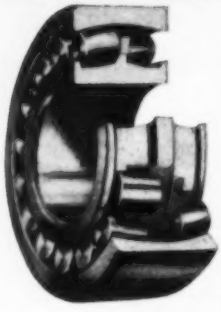
TORRINGTON BEARINGS AT WORK



*A 1036 jaw crusher, 30" x 24" roll crusher and 4' x 12' 2½" deck screen—all combined in a portable unit meeting state highway weight limitations—put the Universal Senior "R" Gravelmaster in a class by itself. Jaw crushers in many of these unique units operate with precision-ground, self-aligning TORRINGTON Spherical Roller Bearings.*



# Cutting Costs



# In Crushers!

TORRINGTON Spherical Roller Bearings are cutting operating and maintenance costs in scores of today's largest, most powerful crushers (see typical unit above). Here's how they do it:

First, TORRINGTON Spherical Roller Bearings are inherently self-aligning. They compensate for momentary deflections due to shock loads, run smoothly under severest working conditions.

Second, their high-conformity rollers and races are precision ground from the finest of heat-treated, bearing-quality steels. Friction is held to a practical minimum. Uniform hardness of all load-bearing parts gives longer bearing life.

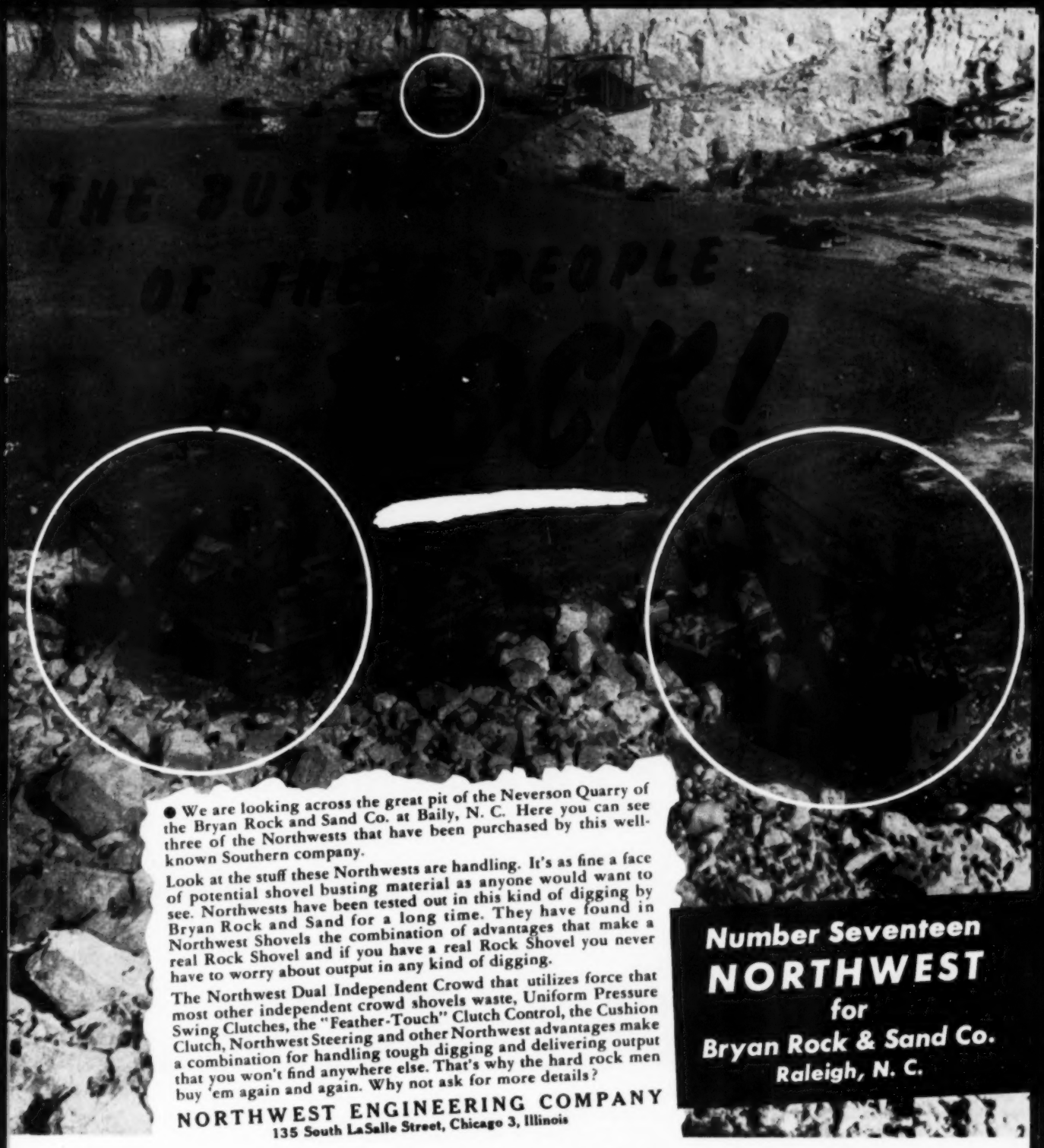
Finally, one-piece, cast-bronze, land-riding cages (one for each path of rollers) assure accurate roller guiding, eliminate roller binding.

These cost-cutting features more than pay their way not only in crushers but also in pulverizers and vibrating screens, grinding mills and rotary kilns. So for *all* your heavy-duty applications, specify TORRINGTON Spherical Roller Bearings!

THE TORRINGTON COMPANY
South Bend 21, Ind. Torrington, Conn.

**TORRINGTON SPHERICAL ROLLER BEARINGS**

Spherical Roller • Tapered Roller • Cylindrical Roller • Needle • Ball • Needle Rollers



● We are looking across the great pit of the Neverson Quarry of the Bryan Rock and Sand Co. at Baily, N. C. Here you can see three of the Northwests that have been purchased by this well-known Southern company.

Look at the stuff these Northwests are handling. It's as fine a face of potential shovel busting material as anyone would want to see. Northwests have been tested out in this kind of digging by Bryan Rock and Sand for a long time. They have found in Northwest Shovels the combination of advantages that make a real Rock Shovel and if you have a real Rock Shovel you never have to worry about output in any kind of digging.

The Northwest Dual Independent Crowd that utilizes force that most other independent crowd shovels waste, Uniform Pressure Swing Clutches, the "Feather-Touch" Clutch Control, the Cushion Clutch, Northwest Steering and other Northwest advantages make a combination for handling tough digging and delivering output that you won't find anywhere else. That's why the hard rock men buy 'em again and again. Why not ask for more details?

NORTHWEST ENGINEERING COMPANY
135 South LaSalle Street, Chicago 3, Illinois

**Number Seventeen**
**NORTHWEST**
**for**
**Bryan Rock & Sand Co.**
**Raleigh, N. C.**

# NORTHWEST

**SHOVELS • CRANES • DRAGLINES • PULLSHOVELS**

*Convertible for any Mining Material Handling or Excavation Problem*

# FLEXIBILITY! High Production!

10″ x 30″ Jaw Crusher | 36-S Gyrasphere Crusher | 4′ x 12′ Vibro-King Screens | 20″ x 15′ Sand Classifier | 36″ x 25′ Sand Drag

4′ x 10′ two-deck Scalper Screen

*Tri-County Gravel Co.*
*Sandyville, Ohio*

24″ x 91′ Stacker Conveyor

## *Producing Specification Aggregate with*

# TELSMITH

24″ x 5′ Standard Plate Feeder

Mr. I. J. LeBold, experienced and successful Ohio aggregate producer, recently purchased this Telsmith Engineered and Equipped Plant. It economically processes 100-125 tons per hour of sand and gravel to meet Ohio State Highway Specifications. Three sizes of gravel, two sizes of sand and a minus ¾″ road gravel are produced with only minor adjustments and, in cold weather, the plant can be changed from a washing application to a dry road gravel plant by flipping one gate. Get all-Telsmith plant story in Bulletin 266.

G-22

SMITH ENGINEERING WORKS, 504 E. CAPITOL DRIVE, MILWAUKEE 12, WISCONSIN

Cable Address: Smigworks, Milwaukee

# Peering at New Profits

The 'see it for yourself' approach is hard to beat when you want the real facts. This alert plant engineer sees new profits down his plant's stack.

New profits in terms of tons of valuable dust that can and should be returned to production rather than being wasted in the air.

Getting at those profits is our business! In one plant, for instance, Buell Engineers recovered over 200 tons of valuable dust in a single week. A clear example of the superior efficiency of Buell equipment. Just send in a sample of the dust, Buell Research can tell you how best to reclaim its value.

With these facts in hand, Buell has served dozens of America's Leading Companies. Why not send for the names of several in your own field?

Our informative brochure—The Collection and Recovery of Industrial Dusts—explains all three Buell systems of industrial dust recovery. For your complimentary copy, write Dept. **18-K**, Buell Engineering Company, 70 Pine Street, New York 5, N. Y.

**buell**

MECHANICAL ELECTRICAL

*20 Years of Engineered Efficiency in*

**DUST RECOVERY SYSTEMS**

# BIG Gyratory Crushers

## THE 6th 60" GYRATORY BUILT BY TRAYLOR

"Traylored" to produce 30,000 tons per day, the latest of Traylor's super-size 60" Gyratory Crushers is on its way to the famous copper mine at Chuquicamata, Chile. This crusher is equipped with Traylor's original curved concaves and bell head.

Some idea of the weight of this gigantic machine can be judged from the relatively small eyebolt used to lift the shaft. It weighs over half a ton. The cast steel frame of the crusher is over 5" thick at several points.

**Traylor built the first successful 60" Gyratory in 1919 . . . 34 years ago.** It proved that a gigantic crusher with high hourly capacity could effect amazing production economies. This first 60" was sold to a Michigan limestone producer. Because of its outstanding efficiency, this same customer purchased their second 60" Traylor Gyratory four years later. Of these 60" crushers, three are in Michigan, one in Arizona, one in England and one in Chile. Capacities up to 3500 tons per hour.

A Traylor LEADS TO GREATER PROFITS

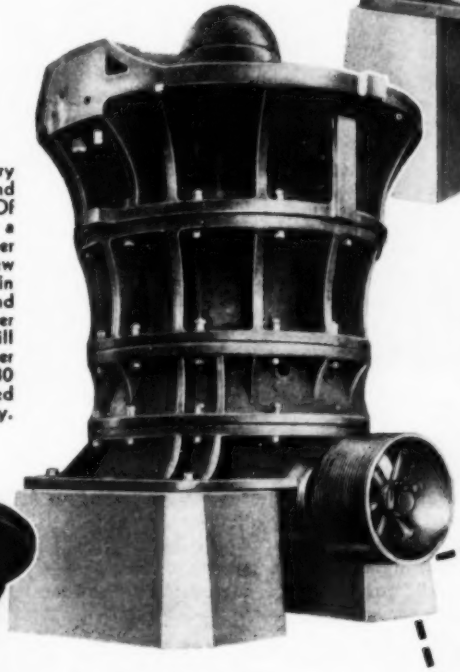
Since 191

# are "Traylor-MADE"

**Result:** Traylor has acquired special skills and facilities for building these big machines.

With 38 of these huge Gyratory Crushers in the field, Traylor design and construction have been proved under a wide range of operating conditions. To match this accumulated "know-how," Traylor has expanded facilities to build these big crushers with precision and efficiency. Consequently, the producer who needs 645 to 3500 tons hourly production will find the Traylor TC a crusher of unusual operating economy and dependability. Write concerning your requirements. Let us show why it pays in the long run to buy a Gyratory "Traylored" to your individual needs.

FOUR 48" Traylor Gyratory Crushers have been built and TWO are in the works. Of those in the field, one is in a Pennsylvania ore mine, another is crushing trap rock in New Jersey, still another is in Minnesota on iron ore and the fourth in Nevada on copper ore. The two in the works will be crushing iron ore and copper ore. Capacities up to 1980 tons per hour are obtained with the 48" Traylor Gyratory.



EIGHT 54" Traylor Gyratory Crushers are in the field, four in Canada, one in England, one in Mexico, one in Michigan and one in Nevada. These crushers are used to help produce cement, nickel, copper and iron. The Traylor 54" Gyratory has hourly capacities from 1400 to 2240 tons.

EIGHTEEN 42" Traylor Gyratory Crushers are in a wide range of service. One is in Chile, two in Canada and the rest dispersed over 14 different states. The 42" Traylor Gyratory provides capacities up to 1290 tons per hour.

FOR MORE INFORMATION
mail this coupon today to . . .

**TRAYLOR ENGINEERING & MANUFACTURING CO.**
1556 MILL ST., ALLENTOWN, PA.

Send me complete facts about the Traylor TC Gyratory.

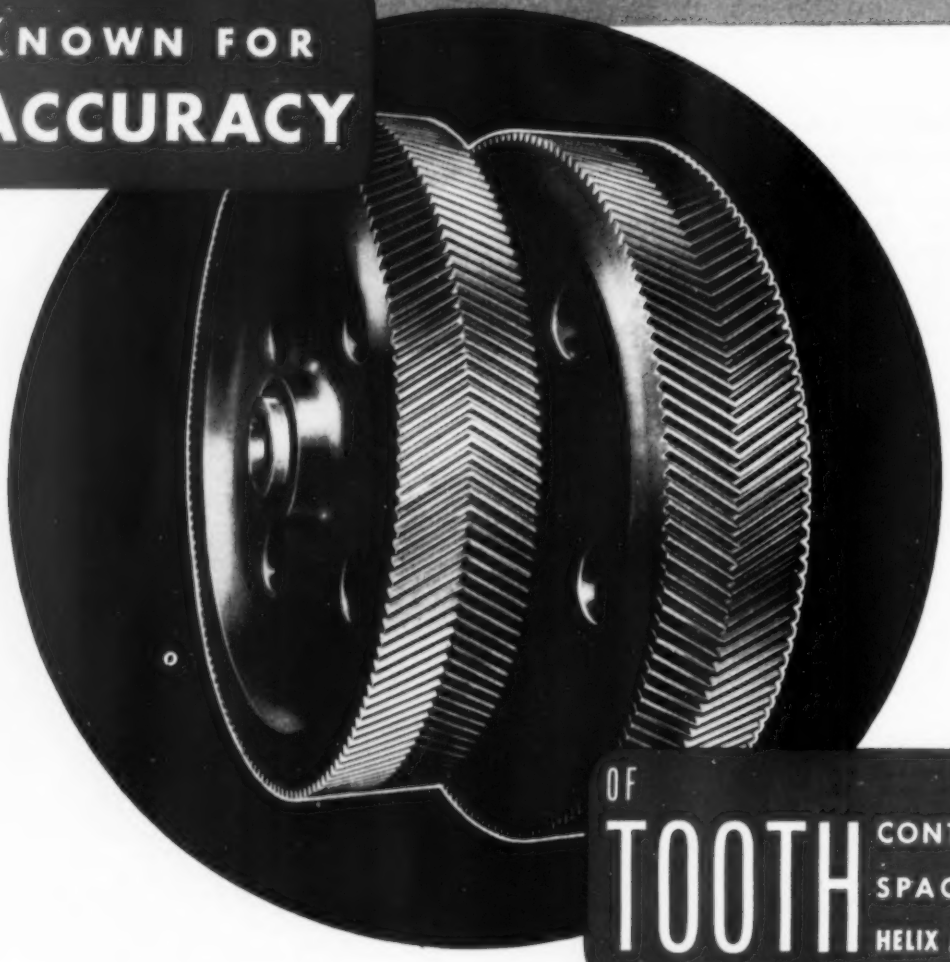
Name: _____ State _____
Position: _____
Company: _____
Address: _____

Sales Offices: New York • Chicago • San Francisco
Canadian Mfrs: Canadian Vickers, Ltd., Montreal, P.Q.

**Traylor has built 38 of the world's biggest crushers**

# PHILADELPHIA HERRINGBONE GEARS

KNOWN FOR ACCURACY



OF TOOTH CONTOUR SPACING HELIX ANGLE

Continuous tooth construction gives great load carrying capacity with a smooth flow of power. Made by Philadelphia, their high quality results from selected materials, controlled manufacture and careful inspection.
Philadelphia Continuous Tooth Herringbone gears are available in sizes up to 60" diameter, 18" face. Staggered Tooth Herringbone gears up to 152" diameter.

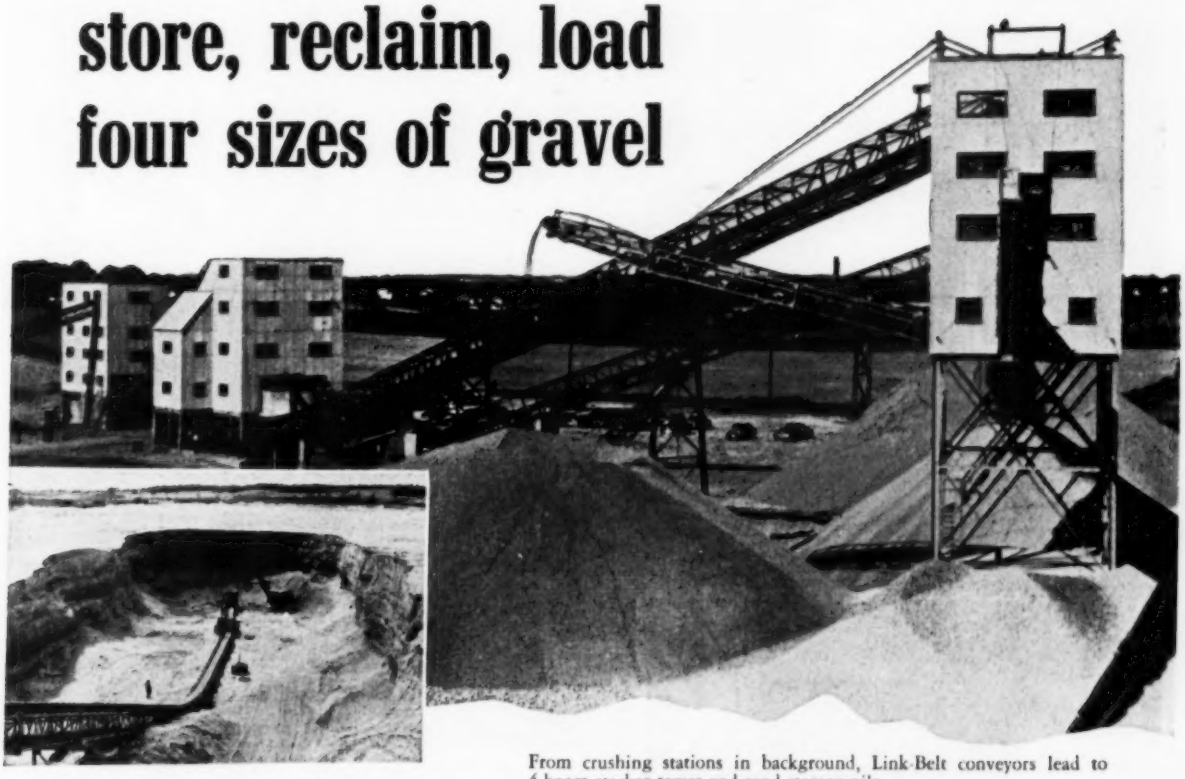
For full information send for our Gear Catalog.

## Philadelphia Gear Works, INC.

ERIE AVE. AND G ST., PHILADELPHIA 34, PA.
NEW YORK · PITTSBURGH · CHICAGO · HOUSTON · LYNCHBURG, VA.

*Industrial Gears and Speed Reducers*
*LimiTorque Valve Controls*

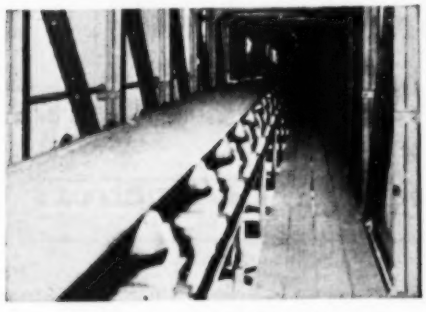
# Here's an efficient way to store, reclaim, load four sizes of gravel



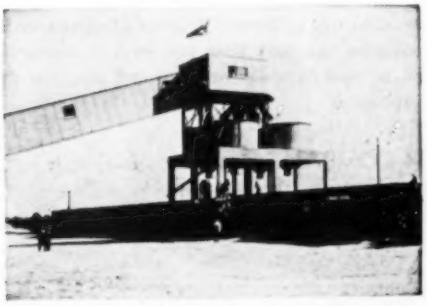
From crushing stations in background, Link-Belt conveyors lead to 4-boom stacker tower and sand storage pile.



Inclined conveyor raises material from pit to primary crushing building.



Reclaim conveyor in main tunnel running to top of 4-bin loading tower.



Four loading tower bins are supplied with sorted gravel by conveyors.

## Two LINK-BELT belt conveyor systems move 350 tph from pit to rail head at Consolidated Sand & Gravel Ltd., Paris, Ontario

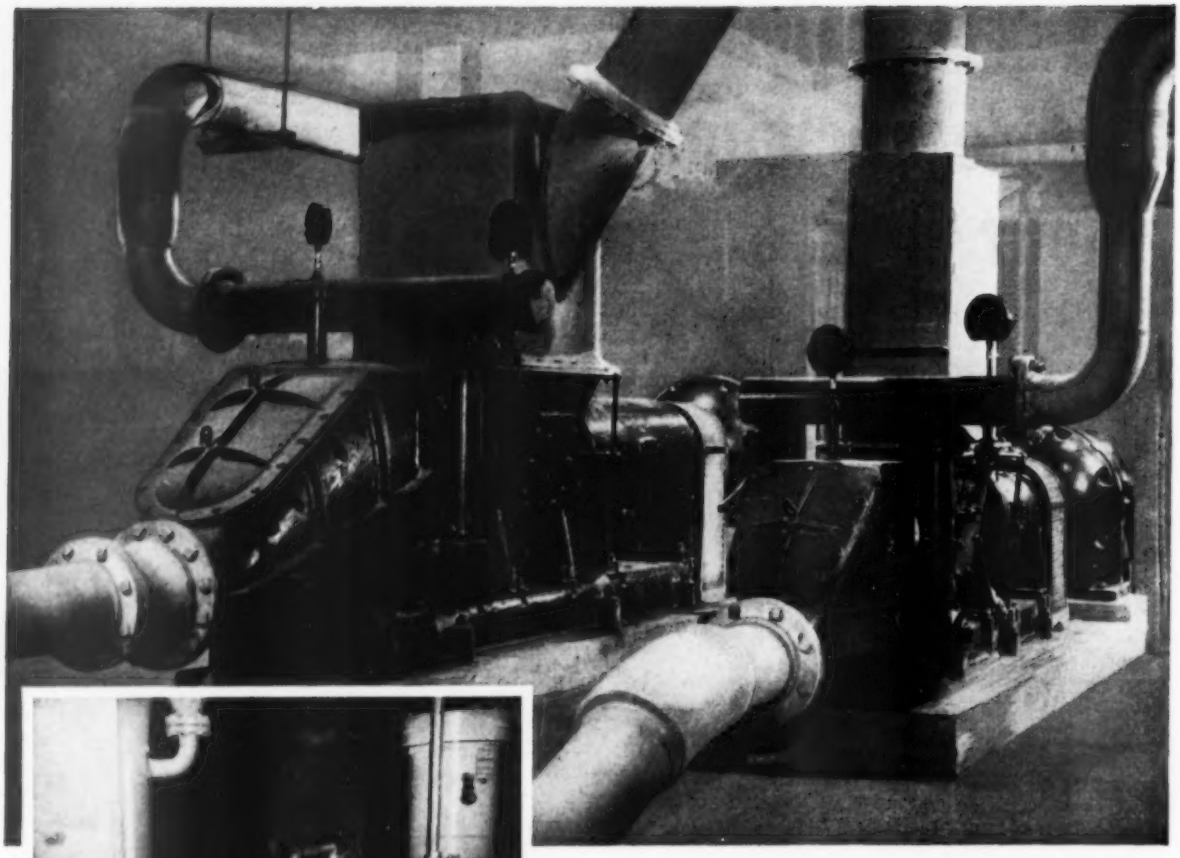
MOVING sand and gravel from pit to stockpiles . . . then from storage to loading — two Link-Belt belt conveyor systems provide efficiency plus flexibility at this gravel plant. Producers everywhere have learned to expect this superior performance from Link-Belt.

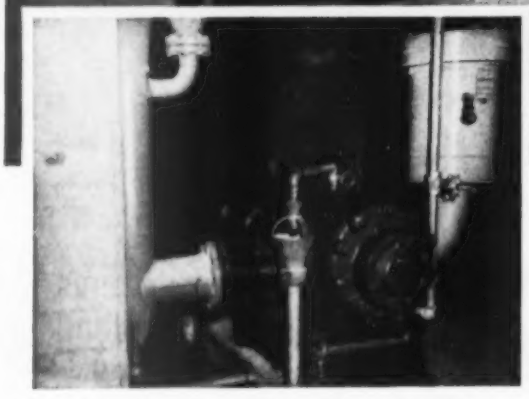
Not only for conveying — but for feeding, washing, classifying and screening as well — Link-Belt offers dependable equipment . . . applied with the expert knowledge gained on many installations. For a reliable analysis of your handling and preparation requirements, call the Link-Belt office near you today. You'll get the benefits of an unrivalled breadth of experience and equipment. Also send for Catalog No. 2126.

**LINK-BELT**

**CONVEYING & PREPARATION MACHINERY**

LINK-BELT COMPANY: Plants: Chicago, Indianapolis, Philadelphia, Colmar, Pa., Atlanta, Houston, Minneapolis, San Francisco, Los Angeles, Seattle; Scarboro, Toronto and Elmira, Ont. (Canada); Springs (South Africa); Sydney (Australia). Sales Offices in Principal Cities. 13.34





Top photo: Two Fuller-Kinyon Pumps installed in a cement plant. One conveys 80 tons of raw materials and the other 360 barrels of finished cement an hour. Lower photo: Fuller Rotary Single-stage Compressor furnishing air for the raw material pump, capacity 1044 c.f.m., 26-lb. pressure.

# A combination that's hard to beat . . .

## FULLER-KINYON PUMPS and FULLER ROTARY COMPRESSORS

**FULLER-KINYON:** The system that is recognized as the outstanding means for conveying many types of dry, pulverized materials from processing equipment to storage bins and silos; from storage to packer bins, process, cars, ships, and barges. Also used for unloading from cars, ships, and barges. For certain requirements the system can be remote or automatically controlled. It meets every demand placed upon it—full capacity can be economically maintained up to the maximum conveying distance. Safe, clean, efficient conveying.

**FULLER ROTARY COMPRESSOR:** This compressor delivers a uniform flow of air, without pulsations, discharging the air directly into the Fuller-Kinyon Pump, without unloaders or air receivers. Connected thus, the power input conforms automatically to the work-load (back pressure) of the conveying system. Air—where and when needed to do the work in an efficient and economical manner.

Why not take advantage of Fuller's 26 years of experience in the field of conveying the next time you have a conveying problem? We'll be glad to work with you and give you the benefit of this experience.

FULLER COMPANY, Catasauqua, Pennsylvania
Chicago 3—120 So. LaSalle St.
San Francisco 4—420 Chancery Bldg.

**Fuller**

26 YEARS' EXPERIENCE IN PNEUMATIC CONVEYING
PIONEERS OF HIGH-EFFICIENCY VANE-TYPE ROTARY COMPRESSORS

P-140

keen?

Keen judgement can save you a peck of trouble when it comes to picking the right line of lubricants . . . and top mining men, throughout the country, with a keen eye for increased production and fewer machinery repairs, have chosen the complete Cities Service Line. Find out about the super-performance of Cities Service Lubricants and take advantage of the free services of an expert Cities Service Lubrication Engineer. Write Cities Service Oil Company, Dept. K15, Sixty Wall Tower, New York 5, New York.

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

# NEW!

**EIMCO 105's are new equipment for mining, construction, quarry, tunneling, logging, oil fields, farming or any job requiring a thoroughly tough unit as a prime mover, bulldozer, or loader.**

**Machines are designed, usually, for a weight limit to sell at a price OR THEY ARE DESIGNED FOR SERVICE. EIMCO machines have always been designed for service — weight and price receive no consideration. The result in this case is a unit designed to give maximum life — (3 to 4 times more than ordinary equipment in the same class) — with minimum maintenance attention. Trouble free service for many years on the job.**

**Construction is rugged, with each piece designed for maximum loading conditions — using the most modern metallurgical research and best in tooling and equipment. Each part is processed to give it toughness and hardness in the right places.**

**On the EIMCO 105 you'll find no weak spots designed to produce repair parts sales. No bulk weight spots to provide "cheap beef". Every part is functional — made of steel — fabricated, or alloy steel forgings and castings. The 105 is powered to give maximum effective use of every ounce of energy applied.**

**See this unit in action — operate it yourself. There is nothing like it anywhere! You'll be amazed at the easy controls, the performance — the simplicity. Write for more details.**

The Eimco Corporation, manufacturers of heavy mining, construction and processing equipment and has been serving industry since 1884. With its own complete manufacturing facilities, which include iron and steel foundries, steel fabrication shops, forge and press shops, complete machine and assembly units, engineering, research, testing and process development departments, Eimco controls the manufacture of the product from pouring of the metal to testing of the finished product.

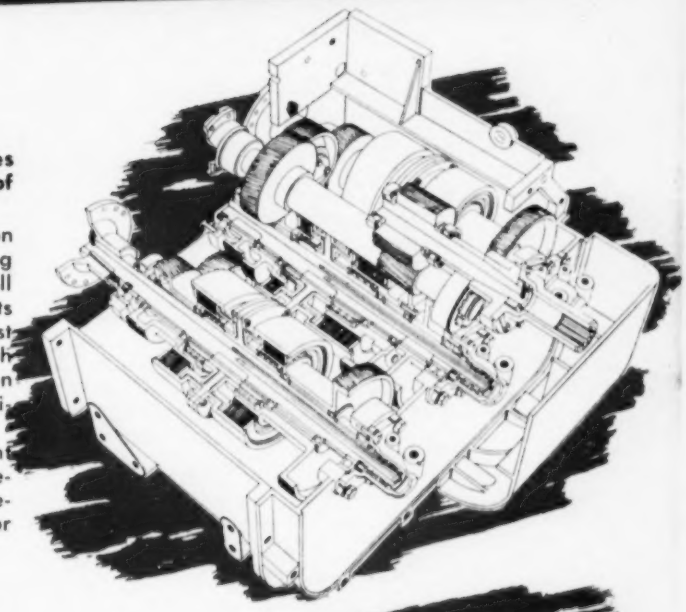
LOADER—WITH COST SAVING ADVANTAGES

## NEW Transmission:

**Eimco's great new Unidrive achieves supremacy in engineering advancement of tractor power transmissions.**

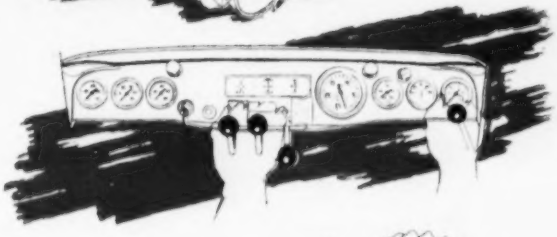
The Unidrive is a compact transmission containing in one unit all of the gearing and clutches for speed changing and full independent reversal of each tracks. Its unique design combines all of the best features of torque converter, constant mesh gearing, hydraulically actuated friction clutches and sealed oil bath, pressure lubrication of all wearing parts.

The oil-cooled, positive engagement clutches never need adjustment. The precision helical gearing is alloy steel, carefully heat-treated and micro-shaved for years of quiet operation.



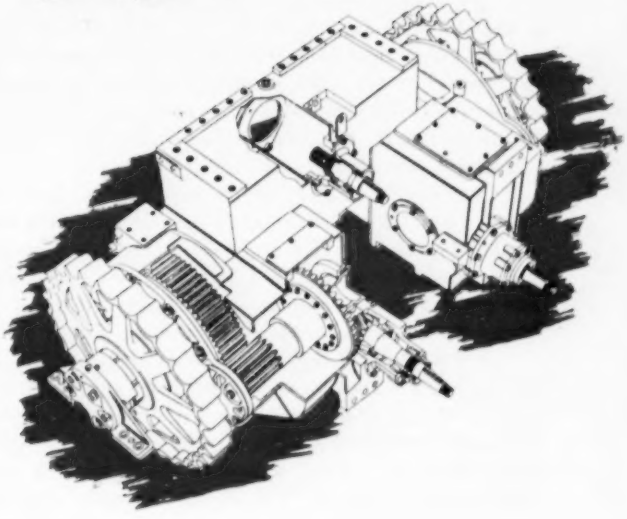
## NEW Controls and Instruments:

The Eimco 105 may be operated by one hand covering two small levers. Push for forward motion, pull for reverse motion. Each lever controls the track on its respective side, a twist of the wrist starts one track in forward motion and the other in reverse for a spin turn or release one handle and it will automatically return to neutral for a gradual turn. Attachments, such as the Eimco loader can be operated by the other hand.



## NEW Final Drive:

Each track is equipped with its own final drive in a cast steel case with a cast steel cover. These final drives do not house clutches or troublesome gadgets. They are sturdy heavy-duty parts carefully machined for silent operation and long service under unusually difficult job conditions.



## NEW Other Features:

There are many other features in the 105 such as: instant reverse at all speeds, torque converter cushioned drive, air cooled precision disc brakes, all metallic clutch facings, full flow oil filters, force feed lubrication, adjustable digging depth stops, variable height discharge, 1½ to 2½ cubic yard buckets and many others.

EIMCO

THE EIMCO CORPORATION

Salt Lake City, Utah, U.S.A.

Export Office: Singer Bldg., 63 South St., New York City

# DEMONSTRATED...SOLD...REORDERED!

## "Eucs"

## Maintain 87% Job Availability at Norway Mine!

**AT Sydvaranger iron mine in Norway,** a Model TD 22-ton Rear-Dump "Euc" on demonstration worked with a fleet of tractor-trailer units of other make. Performance of this "Euc" and its 25% greater job availability was so impressive that seven additional Rear-Dump Euclids were purchased . . . the original hauling fleet is being replaced or converted to other use.

Working 24 hours a day, 6 days a week, the year 'round, "Eucs" at Sydvaranger have averaged 87% job availability including time required for periodic servicing and installation of special equipment. They are loaded with iron ore and heavy overburden by a 4½ yd. shovel, and have a round trip haul of about 3½ miles.

The simple but rugged design of job-proved "Eucs" is paying off at this mining operation 250 miles north of the Arctic Circle just as it is on hundreds of other mine, quarry and earth moving jobs throughout the world. Have your Euclid Distributor provide a hauling production and cost estimate based on the use of Euclids for your work . . . there's no cost or obligation.

**The EUCLID ROAD MACHINERY Co.**
Cleveland 17, Ohio

EUCLID (GREAT BRITAIN) LTD. • GLASGOW, SCOTLAND

# Euclid Equipment

FOR MOVING EARTH, ROCK COAL AND ORE

# Why do some crushers earn more profit than others?

There can be several answers to the above question . . . but the most successful producers are generally those who *keep maintenance costs down.*

That, in a nutshell, is why more and more crusher men are switching to ORO Manganese replacement parts. They've found that when crushing surfaces are made from this remarkable metal, they give up to 25% longer service.

There are three reasons.

*First*, by use of several alloy additions, Kensington engineers have succeeded in developing a number of remarkable wear-resistant alloyed manganese steels. These metals actually *fight back* when exposed to wear.

Parts made from ORO KENKROME, for example, have unusual initial hardness, but develop an even greater *surface hardness* when exposed to impact. But while their surface becomes harder and harder, the metal underneath always remains tough . . . better able to stand the shocks and stresses which shatter less durable metals.

*Second*, Kensington's own scientific process of heat treating gives these metals a structure superior to that of ordinary manganese steels . . . and makes them even better equipped to resist wear.

*Third*, in most instances the original design has been improved. Kensington's Quad-edge, renewable hammer tips offer a good example. This exclusive design provides *four* service edges. In most cases, half the metal can be worn away before replacement is necessary. Hammer shanks may be used over and over again.

The following replacement parts are available in ORO Manganese:

- Jaw and cheek plates *(for jaw crushers)*
- Roll shells, smooth and corrugated *(for roll crushers)*
- Mantles, bowl liners *(for cone crushers)*
- Mantles, concaves *(for gyratory crushers)*
- Hammers, grates, liners *(for pulverizers)*
- Shell and end liners, screens *(ball, rod, tube mills)*
- Cages (impellers) and liners *(for disintegrators)*

Despite their longer life, *these cost no more than ordinary parts.*

It will take only one trial to prove to you that ORO Manganese is all we claim. There's a great possibility that the coupon below may save you hundreds of dollars.

Mail it today.

**Wear Resisting ORO Manganese Replacement Parts**

Long-wearing mantles and bowl liners for cone crushers.
Roll shells for all standard roll crushers.
Concaves (regular, non-choking, or reduction type) for gyratory crushers.
Quad-Edge renewable-tip and conventional one-piece hammers for hammer mills.

**Kensington STEEL COMPANY**

**KENSINGTON STEEL CO., Dept. P, 505 Kensington Ave., Chicago 28, Ill.**
SUBSIDIARY OF POOR & COMPANY • CHICAGO

☐ Quote Prices ☐ Have Representative Call ☐ Send Literature

Type of Crusher_____ Make_____

Size_____ Casting Part Number_____

NAME_____

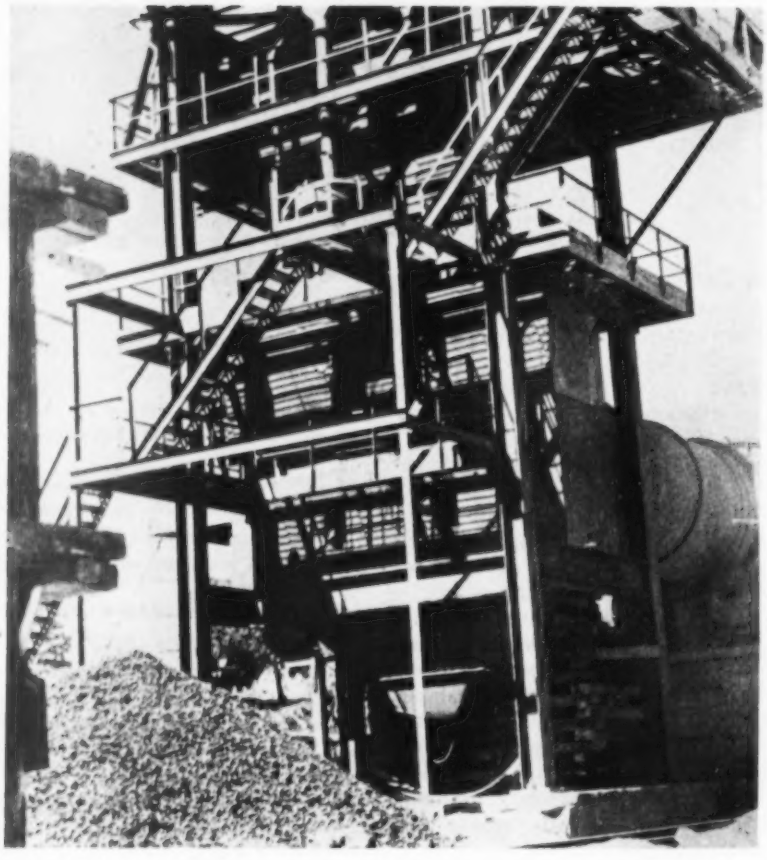
COMPANY_____

ADDRESS_____

CITY_____ ZONE_____ STATE_____

# HIGH QUALITY LIME WITH

## *200 TON PER DAY PLANT*



200 TON PER DAY LIME PLANT 10′ x 150′ KENNEDY KILN WITH PREHEATER, DUST CHAMBER AND BY-PASS STONE FEEDER

**This typical example of KENNEDY modern lime plant is in operation at Cal de Apasco, Apasco, Mexico. Equipped with 10′ x 150′ Kennedy rotary Kiln, with preheater and deheater and internal heat exchanger, this modern plant produces more than 200 tons, daily, of high quality lime. Operation and maintenance costs are low, labor requirements are minimum, fuel consumption extremely low.**

**Regardless of location, Kennedy can engineer-design and equip a lime, cement or mining plant to produce peak capacities at lowest cost.**

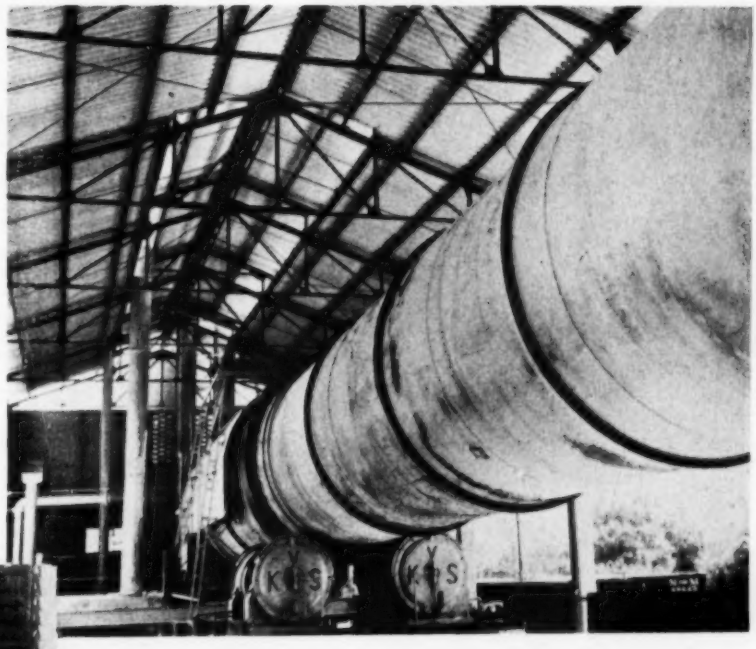
**IT COSTS LESS.. TO OWN THE BEST!**

***OUR ENGINEERS ARE AVAILABLE FOR CONSULTATION ANYWHERE, ANYTIME. SEND FOR BULLETINS DESCRIBING KVS LIME, CEMENT AND MINING MACHINERY.***

# MINIMUM FUEL & LABOR COST

## *OPERATING AT LOW COST!*

**KVS machinery and equipment is designed and built to serve specific uses . . . known to operate properly and at lowest cost under all conditions . . . proven best through a half-century of use in leading plants throughout the world.**



10' x 150' KENNEDY KILN WITH OIL PRE-HEATING COILS LOOKING TOWARDS FIRING END

10' x 150' KENNEDY KILN WITH PRE-HEATER AND DEHEATER AND INTERNAL HEAT EXCHANGER

**KENNEDY-VAN SAUN**
**MANUFACTURING & ENGINEERING CORPORATION**
**TWO PARK AVENUE, NEW YORK**
***FACTORY* DANVILLE, PA.**

There's only ONE
TAPER-LOCK
Solid Steel Conveyor Pulley
1878 DODGE 1953 75th ANNIVERSARY
7-mile conveyor line at Bull Shoals Dam where Dodge Solid Steel Pulleys served dependably.

The famous TAPER-LOCK Bushing in the Dodge Solid Steel Conveyor Pulley gives you the equivalent of a shrunk-on fit—and greatly simplifies the job of mounting and de-mounting! The drum type construction of this modern product provides maximum strength with minimum weight. Accurately formed; *uniform* rim thickness. Fully enclosed to exclude dust, dirt, water. Diameters 6 in. to 8 ft., all face widths. Popular sizes stocked by our distributors.

**DODGE MANUFACTURING CORPORATION, 4000 Union St., Mishawaka, Indiana**

**DODGE**

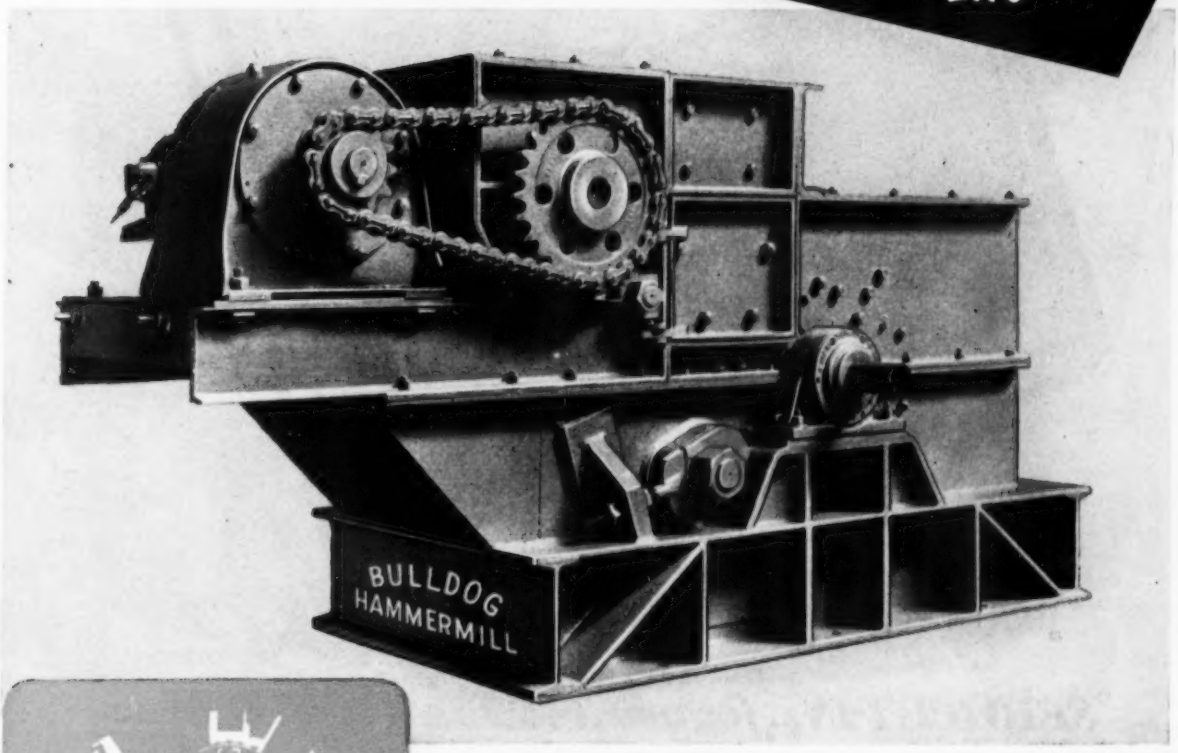
*of Mishawaka, Ind.*

**CALL THE TRANSMISSIONEER,** your local Dodge Distributor. Factory-trained by Dodge, he can give you news of cost-saving methods. Look for his name under "Power Transmission Equipment" in your classified phone book.

# BULLDOG HAMMERMILLS

## Assure Rock Plants.....

**Twice the Capacity with 15 Times Longer Hammer Life***



**STATIONARY BREAKER PLATE TYPE FEATURES**
**PETTIBONE Manganese Steel Hammers, Liners, Cage Bars, and Adjustable Breaker Plate**
**1 TO 1000 TONS PER HOUR CAPACITY**

### *ASK FOR PROOF OF MONEY-SAVING USES FOR PRIMARY, SECONDARY AND FINE REDUCTION

No hammermill offers as much production and operating efficiency as the BULLDOG! That's why operators who have checked them all know the BULLDOG'S exclusive non-clog feature of the Moving Breaker Plate reduces slow-downs and costly maintenance for high moisture materials. The Stationary Breaker Plate has no equal for dry materials. The BULLDOG Hammermill has the greatest hammer life of any hammermill. Write for Bulletin A today.

## HAMMERMILLS, INC.

4700 WEST DIVISION STREET
CHICAGO 51, ILL. • SPaulding 2-9300

Subsidiary of PETTIBONE MULLIKEN CORP.

## *SERVICE PIN... for you, too*

Chances are you've seen this pin. It represents 15 years of service with Socony-Vacuum. Six out of 10 of our engineers and salesmen wear it. Four out of 10 have served over 20 years. In fact, the average length of service of *all* Socony-Vacuum lubrication representatives calling on the construction industry is almost 17 years! All this petroleum engineering experience, the world's greatest, is yours when you call on Socony-Vacuum. Why accept anything less?

**CORRECT LUBRICATION** *for Contractors*

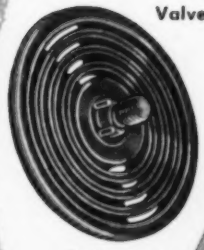
SOCONY-VACUUM

WORLD'S GREATEST LUBRICATION KNOWLEDGE AND ENGINEERING SERVICE

THE FLYING RED HORSE COMPANIES: SOCONY-VACUUM OIL CO., INC., MAGNOLIA PETROLEUM CO., GENERAL PETROLEUM CORP.

# DAVEY COMPRESSORS with Multi-Port Valves

## give you more air per gallon of fuel!


Valve Seat

Valve Seat Disc

Multi-Port Valve

Cushion Plate

Spring Plate

Spring Disc

Buffer

Lock Nut

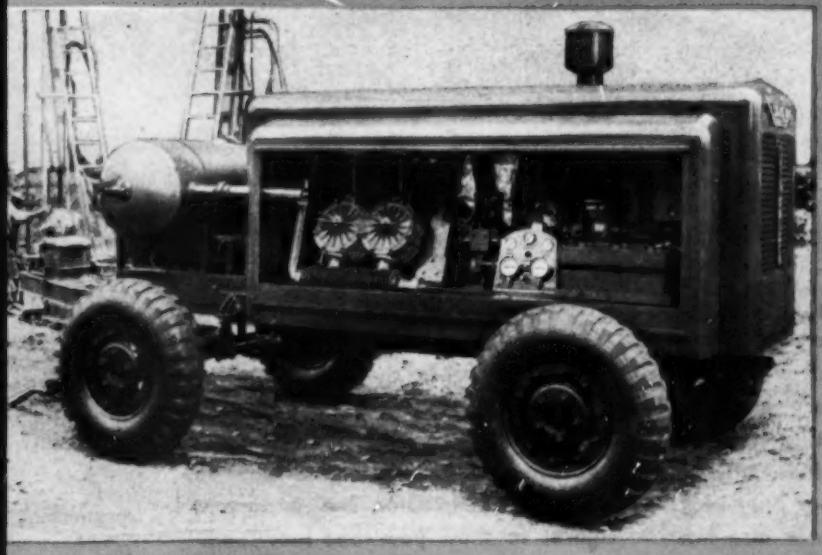
Anchoring Cotter

## DAVEY Multi-Port Valve Assembly

Ask any owner of a new **Multi-Port Valve** Davey. He'll tell you that he is getting more air from less fuel than he ever believed possible.

Davey's new **Multi-Port Valves** set new standards of economical compressor operation. In addition, they never carbon or foul . . . do not require replacement, assure constant full air volume, keep tools operating at peak efficiency.

A-7007



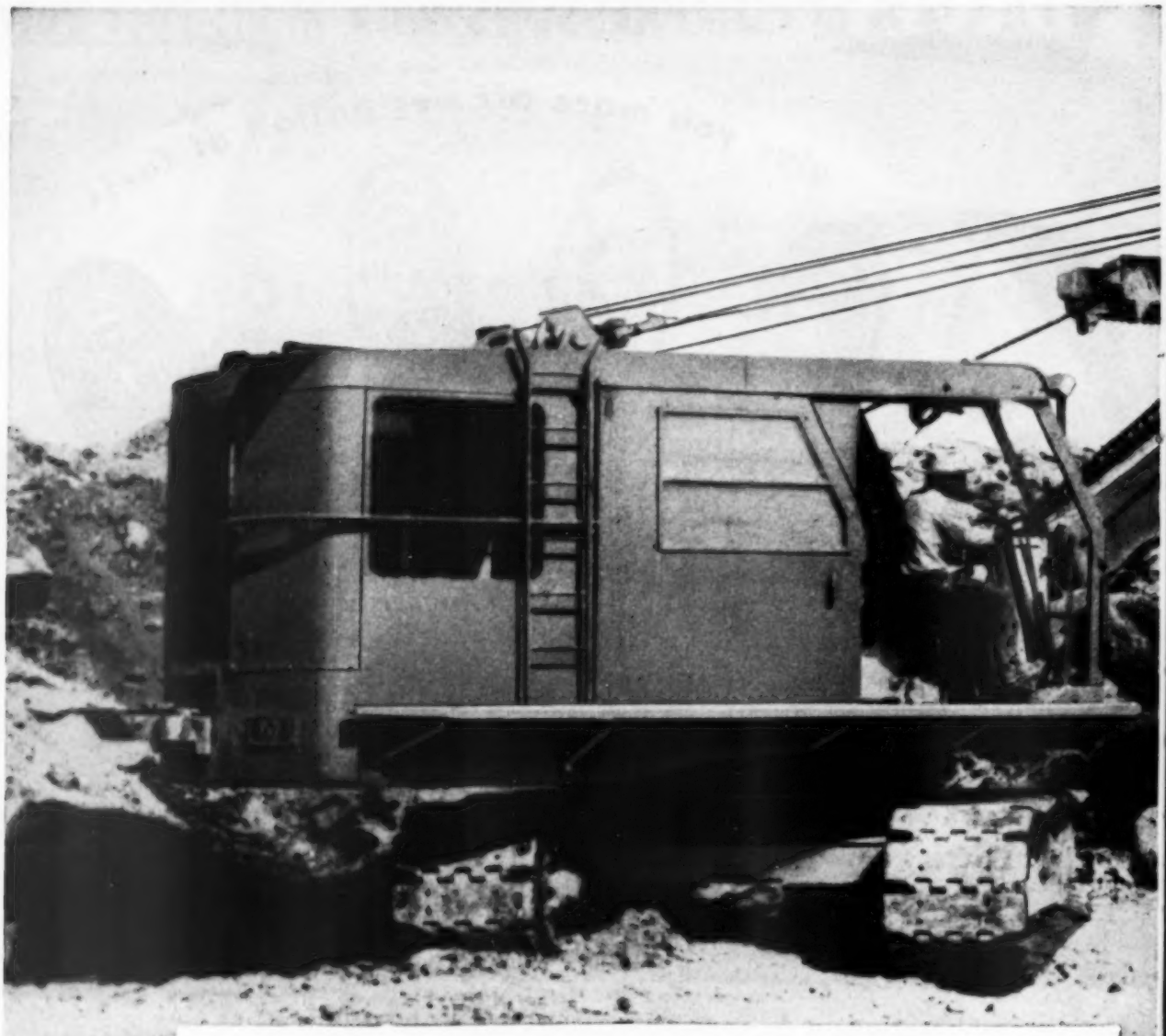
**Davey Super Chief 600 delivers 600 c.f.m. with minimum fuel consumption. It is lightweight, compact, easy to transport from place-to-place.**

**DAVEY**

*pioneers of "air-cooled air"*

Ask your Davey Distributor for data on standard 60 to 600 c.f.m. Davey portable and industrial compressors; "Auto-Air" (truck-mounted) compressors; Mobile Machine Shops and Field Service Units.

**DAVEY COMPRESSOR CO. • KENT, OHIO**



# MEASURE OUTPUT by "KOEHRING WORK CAPACITY"

With Koehring excavators and cranes you gain an important production advantage in extra work capacity. There are some very simple ways to check this. Take lifting capacities, for instance. The machine with the heaviest lift capacity not only picks up larger crane loads — it also has more stability and power to increase shovel, dragline and clamshell output. Be sure to check lift ratings, and other clear-cut measurements of "KOEHRING WORK CAPACITY" before you buy any excavator or crane. Your Koehring distributor has important figures to show you. See him soon.

K331

***lift capacities up to 79½ TONS . . . ½ to 2½ YARDS dipper capacities***

**BIG-PRODUCTION TEAM** — Loading out big-chunk rock, this Koehring 1½-yard shovel is teamed up with Koehring 6-yard Dumpters.® Fast-spotting Dumpters move in close, keep shovel swing short. Square 8 x 8-ft. body permits loading over side or end. No-turn shuttle hauling and instant gravity-dump speed haul cycles.

**KOEHRING Company** MILWAUKEE 16, WISCONSIN

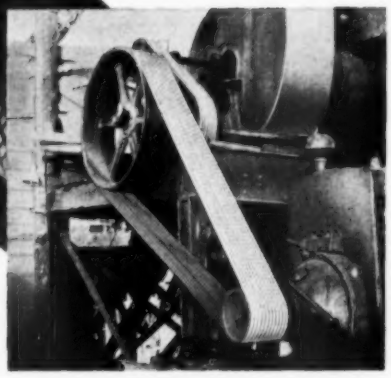
*Subsidiaries:* Parsons • Kwik-Mix • Johnson

# Notice the CONCAVE SIDES (U.S. PATENT NO. 1813698) of the Gates V-Belt-

## . . . that's why Gates V-Belts Last Longer!

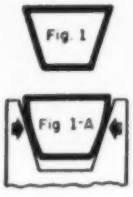
*Look at this!*

**In *half a minute* you can prove for yourself the belt-saving advantage of the CONCAVE SIDES.**



Typical Gates Vulco Rope Drive—the Gates V-Belts are built with Concave Sides to insure longer belt wear.

Take any *straight-sided* V-Belt (Fig. 1) and bend it as it bends in going around its pulley. At the same time, grip its sides with your fingers and *feel* those sides *bulge out* as in Fig. 1-A.



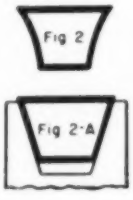

Clearly, those bulging sides will press *unevenly* against the V-pulley—and this causes extra wear at the points shown by the arrows (Fig 1-A).

**When you buy V-Belts, be sure to get the V-Belt with the CONCAVE SIDES— The Gates Vulco Rope.**

## Now bend a Gates Vulco Rope with CONCAVE SIDES (Fig. 2)

As the belt bends, grip its sides—and you will feel the precisely engineered CONCAVE SIDES *fill out* to an *exact fit* in the sheave groove (Fig. 2-A).

These sides press *evenly* against the V-pulley. All wear is distributed *uniformly* across the full width of the Gates Vulco Rope—and this means *longer* belt life and *lower* belt costs for you!




Gates Engineering Offices and Jobber Stocks are located in all industrial centers of the United States and in 71 foreign countries.

CS-537

V-Belts — Hose
Molded Rubber Goods
for Industry
World's Largest Maker
of V-Belts

Gates® VULCO ROPE DRIVES

THE GATES RUBBER COMPANY • DENVER, U.S.A.

Iafolla Crushed Stone Company, Inc., and its affiliate, Iafolla Construction Company, Inc., own and operate this quarry at Portsmouth, N. H. After processing, stone and trap rock obtained from the quarry are either used by the Iafolla Construction Company on its highway construction projects, or are sold to other contractors. Both companies have used Gulf products for over five years and report consistently smooth equipment performance and low maintenance costs.

# Gulf Quality Lubricants and Fuels

## *keep equipment operating smoothly at Iafolla Crushed Stone Company*

Just about No. 1 requirement for a smooth-running quarry operation is smooth-running equipment. That's why so many leading operators, like Iafolla Crushed Stone Company, for example, prefer the petroleum products identified by the familiar Orange Disc.

They have found that Gulf lubricating oils and greases provide better protection for every unit; and that Gulf fuels help insure top engine performance.

Gulf lubricants and fuels work as a team to help quarry operators get more hauls, fewer overhauls, and lower maintenance costs!

Gulf quality products are available to you —along with that Good Gulf Service— through 1400 warehouses in 31 states from Maine to New Mexico. Write, wire, or phone your nearest Gulf office.

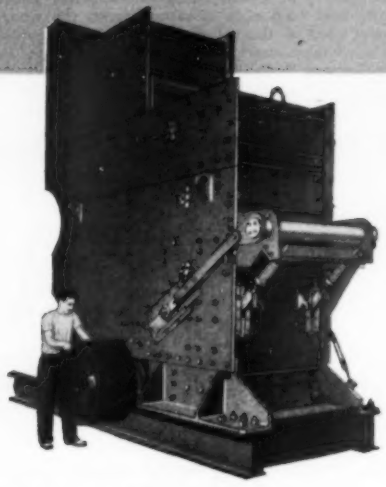
**GULF OIL CORPORATION • GULF REFINING COMPANY**
**PITTSBURGH 30, PENNSYLVANIA**

GULF SERVES INDUSTRY

**GREATER TONNAGES OF BETTER QUALITY AGGREGATE AT LOWER COST PER TON**

# UNIVERSAL'S IMPACT MASTER WITH CONTROLLED IMPACT ACTION

Patent Pending



## GIVES YOU THESE PROFITABLE ADVANTAGES

**1 GREATER CONTROL OF AGGREGATE SIZE**

The reduction is done by the rotor hammers. The speed of the rotors governs the reduction — the greater the speed, the greater the reduction. Three adjustments control percentage of sizes within limits of the finished product.

**2 GREATER RATIO OF REDUCTION**

Any material freely passing into the feed opening can be reduced to specification material in one fast operation. In a closed circuit operation recirculating loads can be kept to a minimum.

**3 CLEANER CUBICAL AGGREGATE**

The terrific impact of the hammers produces a clean high quality cubical product. Sharp points and corners are eliminated. Clay, shale and other soft materials are disintegrated and passed off as fines.

**4 LESS HORSEPOWER PER TON**

Universal's Impact Master has only two moving parts — the two hammer rotors — and they both rotate freely in the same direction with the flow of material. Rock is broken by impact and the finished material is discharged immediately from the breaking chamber.

**5 LOWER MAINTENANCE COSTS**

With the breaking accomplished by the rotor hammers and the immediate discharge of the finished product through the deflector screen grate and lower grate, wear is kept to a minimum. Every part is readily accessible.

**Impact Masters are available with capacities up to 750 tons per hour. Learn how the Impact Master can fit into your operations. Write or ask for full performance details.**

**UNIVERSAL ENGINEERING CORPORATION**
619 C Ave. N.W., Cedar Rapids, Iowa
a subsidiary of
PETTIBONE MULLIKEN CORPORATION
4700 West Division St., Chicago 51, Illinois

UNIVERSAL GAVE CEDAR RAPIDS ITS ORIGINAL FAME FOR QUALITY CRUSHERS **IN CEDAR RAPIDS SINCE 1906**

PMCD **UNIVERSAL**

ENGINEERED FOR TOP OPERATING PROFITS

# Look at this Cheaper Way to Load Materials

BARBER BG GREENE

BUCKET LOADERS

If you load sand, gravel, cinders, chemicals, fertilizers or other bulk materials, look at this self-propelled, pneumatic-tired B-G Bucket Loader.

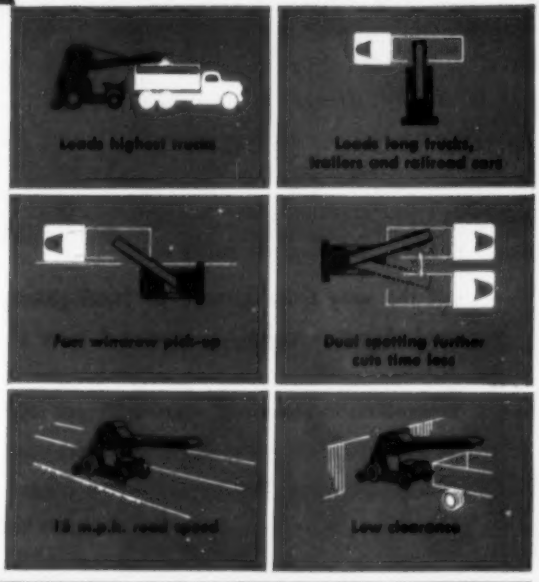
Cost figures prove it to be the most economical way to load trucks. The savings in truck time alone will justify its purchase. For, thanks to the B-G constant flow principle, it will load hour after hour at a rate of 3 cubic yards per minute. Capacity does not fluctuate with operator fatigue or zeal. Requires *only one man* to operate it.

The Barber-Greene Model 543 Bucket Loader can be converted to the Model 544 Loader which loads coal at 5 tons per minute and snow at 11 yards per minute.

There is a Barber-Greene Distributor nearby who will demonstrate how you can reduce costs with a Barber-Greene Bucket Loader.

Write for illustrated catalogs on Pneumatic-tired 543 or Crawler-mounted 82-A.

LOOK AT THIS VERSATILITY!


Loads highest trucks
Loads long trucks, trailers and railroad cars
Fast windrow pick-up
Dual spotting further cuts time loss
15 m.p.h. road speed
Low clearance

# Barber-Greene

Aurora, Illinois, U. S. A.

# CAN YOU GET THIS REACH WITH YOUR SHOVEL?

**24′-1″ CUTTING RADIUS**
**45° BOOM—½ Yard**
**Model 30**

**28′-1″ CUTTING RADIUS**
**45° BOOM—¾ Yard**
**Model 45**

**Here we show** two shovels—a half-yard above and a ¾ yard at right but both offering wide working ranges which invite comparison with any other shovel of the same capacity. These are two distinctly different models. The ¾ yard shovel is not a built-up machine from the ½ yard design. For instance the Model 45 has a unit-cast base with a 71″ diameter roller path whereas the Model 30 has a 56″ diameter roller path.

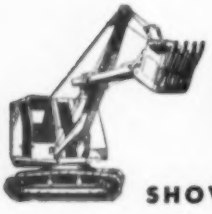
**All the way** from ground to boom-point the ¾ yard shovel is bigger, heavier and more powerful. However both shovels have tandem drums, one-piece continuous chain crowd, electric dipper trip, power booster clutches and many other heavy-duty design and construction features that mean bigger operating value. Why not get the full story on these convertible shovels today by writing for catalogs.

BAY CITY SHOVELS INC., BAY CITY, MICHIGAN

216

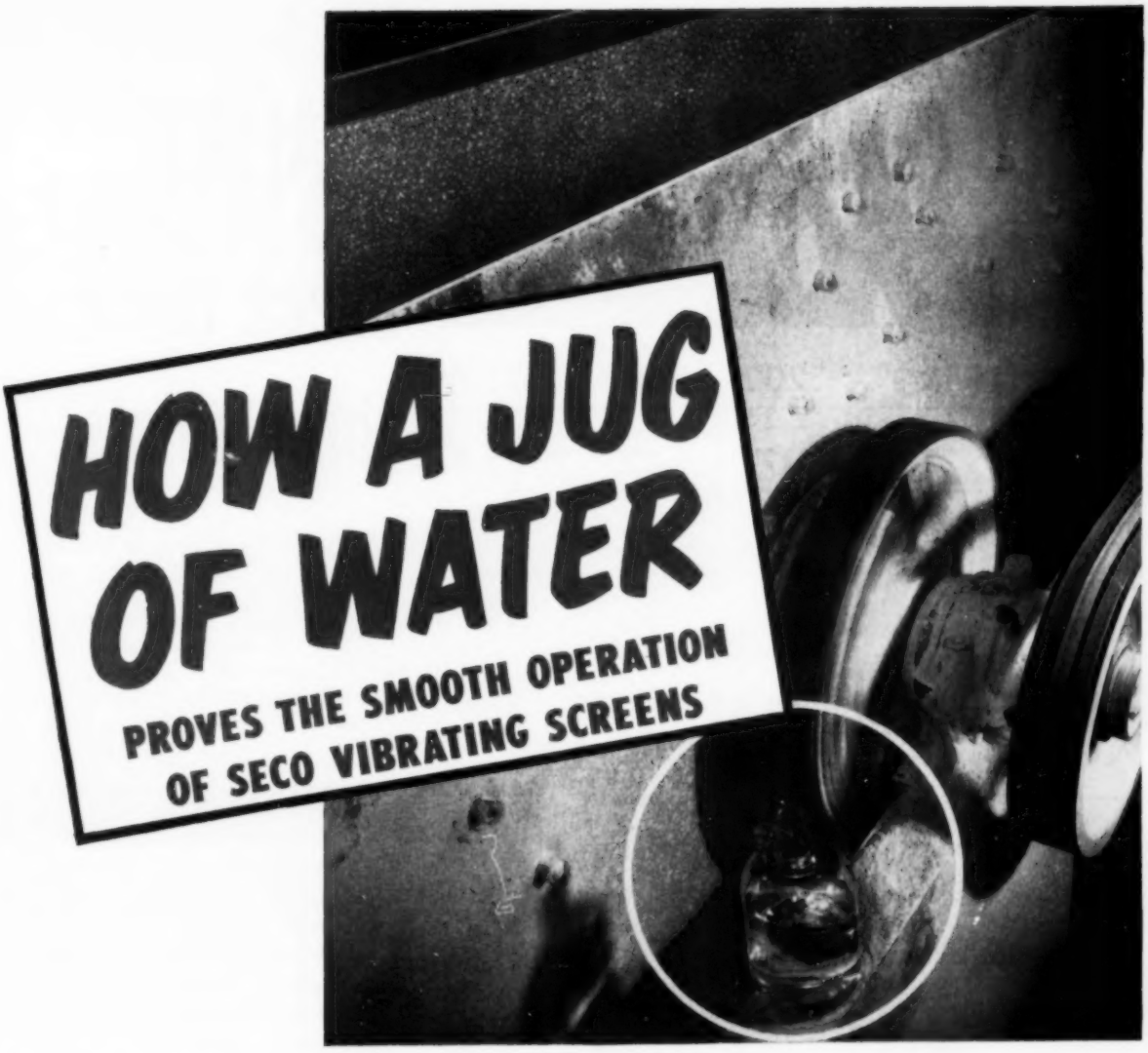
***write for your catalog***

*Get either or both these catalogs, packed with pictures of parts, assemblies and jobs. Ask for Catalog 2530 on the ½ yard and 3745 on the ¾ yard machine—no obligation.*



# BAY CITY

**SHOVELS • CRANES • HOES • DRAGLINES • CLAMSHELLS**




## No Vibration in the Base Frame at Top Speed with Full Load

The jug of water resting on the base frame of this Seco vibrating screen photographed on the job at Buffalo Crushed Stone Company is *clearly undisturbed* by the movement of the live screen body operating with full load at 1050 RPMs.

Here is definite proof that Seco's patented equalized assembly keeps the vibration in the live screen body, where it belongs. The fully controlled true circular action of the screen prevents bobbing, weaving, and excessive blinding.

No wonder thousands of Seco vibrating screen owners report maximum tonnages of materials from ag-lime to rip-rap accurately screened. No wonder Seco vibrating screens stay on the job year after year with little or no maintenance.

Before you buy any screening equipment, get the whole story. Send for Catalog No. 203 today!

**SECO**
**TRUE CIRCULAR ACTION**
**VIBRATING SCREENS**

***SEE YOUR NEAREST SECO DISTRIBUTOR***

**SCREEN EQUIPMENT CO., Inc.**
1750 WALDEN AVENUE, BUFFALO 25, N. Y.
*One of America's Leading Makers of Vibrating Screens Exclusively*

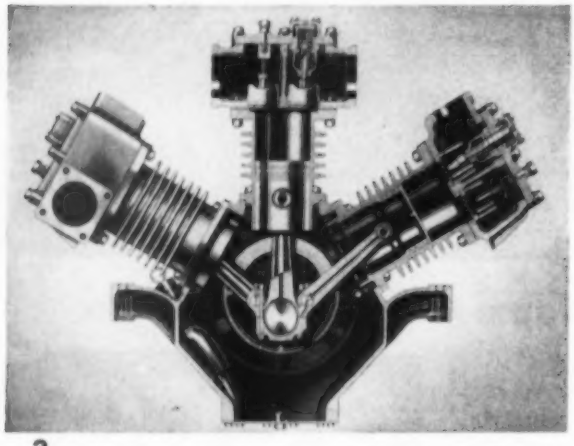
# If you believe

# ALL COMPRESSORS ARE ALIKE...

| SIZE | | | | |
|---|---|---|---|---|
| 600 | 134 | 202 | 68 | 33.7 |
| 315 | 75 | 117 | 42 | 35.6 |
| 210 | 51 | 78.5 | 27.5 | 35 |
| 160 | 37 | 57 | 20 | 35 |
| 105 | 25 | 42.5 | 17.5 | 41.6 |

## check these three points

**1. RESERVE POWER.** There's plenty of that built into every Blue Brute. That means it takes thousands of hours of normal operation before engine wear affects the compressor's output.



**2. EASY MAINTENANCE.** All parts of the Blue Brutes are readily accessible. No special tools or complicated disassembly procedures are needed. And the compressor uses the same oil as the engine.

| | | | |
|---|---|---|---|
| 60' | GASOLINE | 1.31 | 1.42 |
| 105' | GASOLINE<br>DIESEL | 2.16<br>1.66 | 2.35<br>1.73 |
| 160' | GASOLINE<br>DIESEL | 3.18<br>2.45 | 3.44<br>2.60 |
| 210' | GASOLINE<br>DIESEL | 4.32<br>2.89 | 4.70<br>3.06 |
| 315' | GASOLINE<br>DIESEL | 6.25<br>4.38 | 6.75<br>4.64 |
| 600' | DIESEL | 6.30 | 9.20 |

**3. FUEL ECONOMY.** How does your compressor stack up in comparison with the Blue Brute for economical fuel consumption? The figures shown have been determined under normal field operating conditions.

Get all the facts about the Blue Brute from your nearest Worthington distributor. Or write to Worthington Corporation, Construction Equipment Division, Section H.3.6, Plainfield, New Jersey.

**WORTHINGTON**

*IF IT'S A CONSTRUCTION JOB, IT'S A* ***BLUE BRUTE*** *JOB*

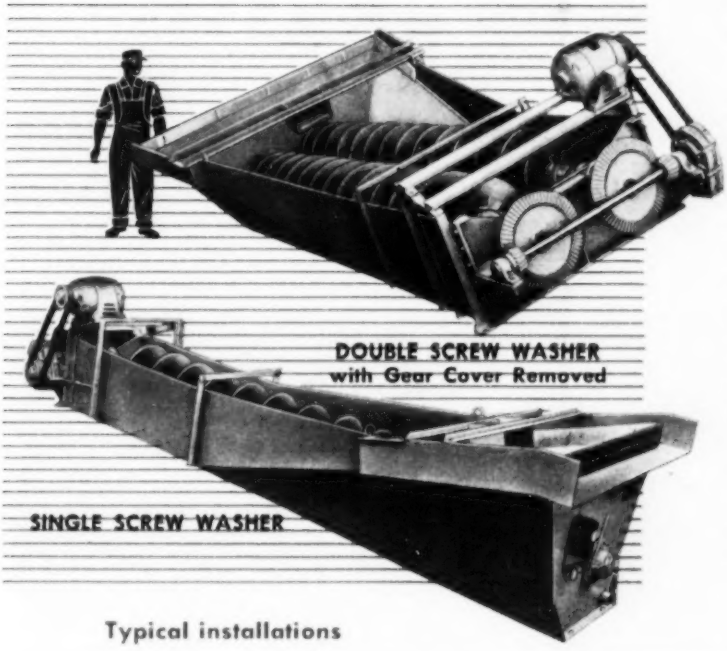
H.3.6

ROCK DRILLS · WAGON DRILLS · PAVERS · CONCRETE MIXERS · PORTABLE PUMPS

**For the Removal of Waste and Water from Sand and Similar Materials**

# *McLanahan* SCREW WASHERS

**are designed for long service life and lowest maintenance cost**

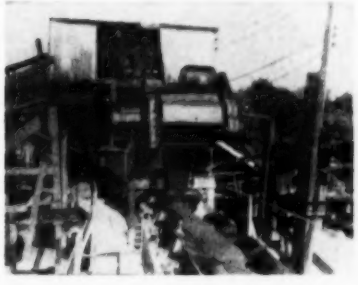



McLanahan Screw Washers—thoroughly proven in service—provide the ultimate in equipment for the efficient, low cost removal of foreign material and water from sand or coarse materials.

These washers contain many outstanding features, including: antifriction bearings which are easily removed without disassembly—extra large settling area—enclosed reduction drive—flights are cast chilled alloy iron for extreme hardness and resistance to wear.

Washers are available in Single and Double Screw models illustrated—in 20′ and 25′ lengths dependent on moisture content and capacity desired. Investigate today!

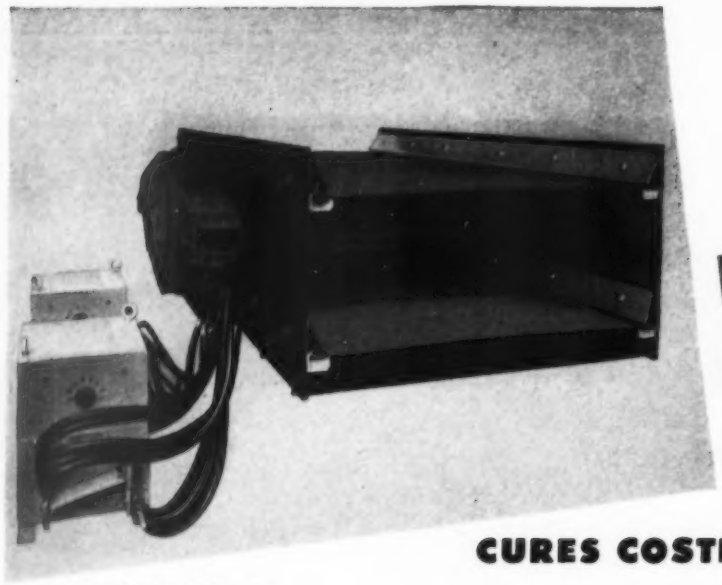
**Typical installations**



**McLANAHAN & STONE CORPORATION**
*Pit, Mine and Quarry Equipment Headquarters Since 1835*
Hollidaysburg, Pennsylvania

**Write for Bulletin SW-953**
This bulletin contains data and drawings on Single and Double Screw Washers. Write for your copy today!

**Dependable Products:** Single and Double Roll—and Jaw Crushers, Crushing Plants, Reciprocating Plate and Apron Feeders, Roll Grinders, Conveyors, Elevators, Screens, Scrubbers, Steel Log Washers, Sewer Washers, Sand Pumps, Hoists, Jigs, Dry Pans, Dryers, Scrap Spudders, Pulleys, Gears, Bearings, Sprockets, Sheaves, Rollers, Bin Gates, Elevator Buckets, Bearings, Car Wheels, Forgings and Bronze Castings.



# HEATING NOT BEATING

## CURES COSTLY SCREEN BLINDNESS

*photo courtesy of Hewitt-Robins, Inc.*

The practice of beating blinded screens, a temporary cure at best, runs up labor cost and causes excessive screen failure. Hanco Screen Heaters forever eliminate costly, inefficient sizing resulting from blinded screens.

### SCREEN HEATING REDUCES SIZING COSTS

1. Labor cost is cut by elimination of cleaning labor!
2. Screen life is greatly extended for it is no longer damaged by manual cleaning!
3. Sizing is more accurate and faster for processing equipment can be operated at full capacity!

*(Every Hanco installation has paid for itself in less than a year!)*

### EASY INSTALLATION ON ALL SCREEN MAKES

Hanco electric screen heaters are furnished as a complete kit—heater unit, lead cables, copper distribution and feed bars and skirt boards. All necessary small parts and complete instructions are included. Hanco units are designed to match original fittings. Speedy installation can be made by competent maintenance personnel.

### HANCO QUICK-CHANGE ASSEMBLY

Available in five styles, Hanco quick-change assemblies assure easy cloth changes. Special skirt boards or tension rails incorporate a wedge type copper distribution bar that is bolted to but insulated from the rail itself. One of the five assemblies shown below is sure to fit your make of screen. Cloth changes are as easy or easier than on an unheated screen.

A-8174

### HANCO SCREEN HEATER ADVANTAGES

1. Hanco heaters have a wide application for they heat brass, plain, stainless and monel steel screens.
2. Unique tap changing device allows screen temperature adjustment under load. This means added economy, for you can quickly adjust to seasonal or load demands.
3. Heater terminals are readily accessible for inspection or adjustment.
4. Compact heater units can be floor, wall or ceiling mounted.
5. There is always positive direct contact with the hook strip of the screen cloth.
6. All electrical contacts are shielded from abrasion.
7. Cloth changes are as quick and easy as they are on unheated screens.

**HANCO HEATERS ARE AVAILABLE ON MOST NEW SCREEN EQUIPMENT**

***Send today for descriptive bulletin***

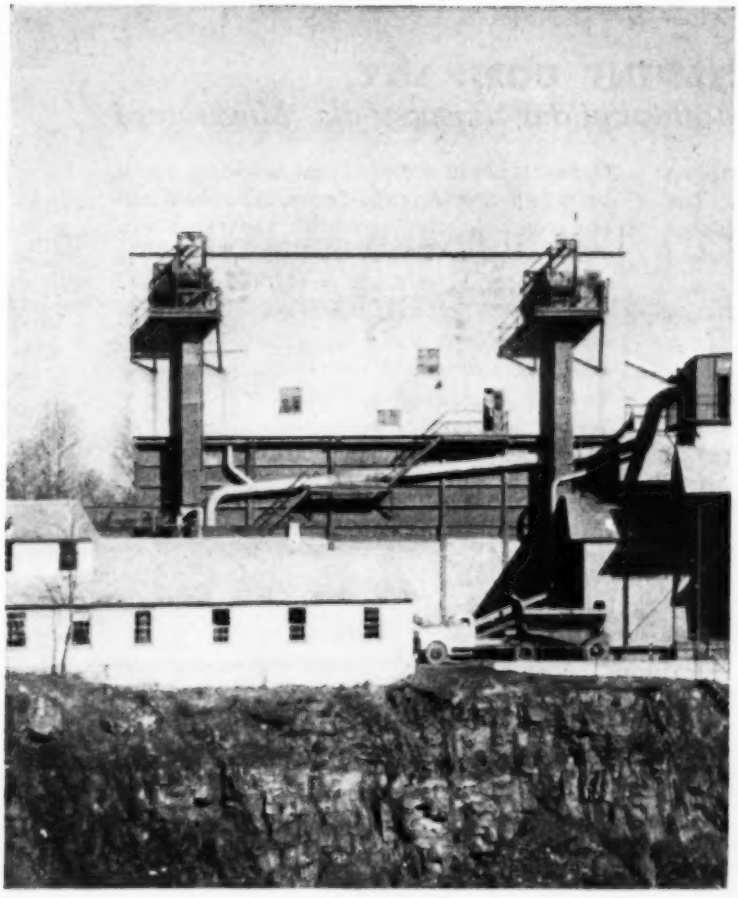
Hanco

***the pioneer electric screen heater***

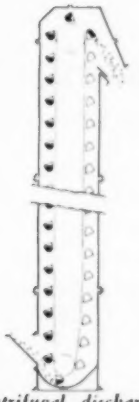
**F. R. HANNON & SONS • CANTON 7, OHIO**

*Engineers & Manufacturers Since 1926*

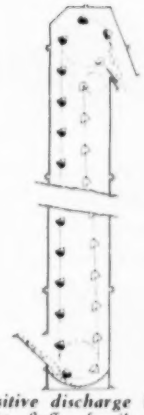
# 13 types...4 basic designs
## to meet your elevating requirements



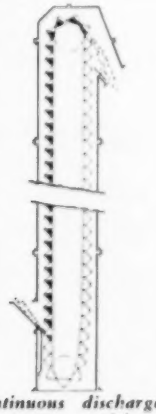
Highly abrasive trap rock is readily handled by these Link-Belt continuous discharge, super-capacity bucket elevators.



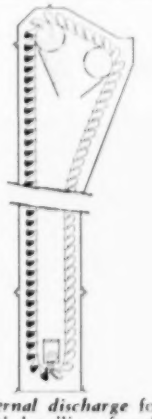
***Centrifugal discharge*** for free-flowing, fine or loose materials with small to medium lumps.



***Positive discharge*** for light, fluffy, fragile or any materials that tend to stick to the buckets.



***Continuous discharge*** for many materials — light to heavy, small to large, abrasive lumps.



***Internal discharge*** for gentle handling of small articles such as pellets, rivets, seeds, castings.

## Let LINK-BELT recommend the bucket elevator best suited to your needs

WHERE large or small quantities of bulk materials must be elevated in limited space, a bucket elevator is the equipment you need in most cases. And, in every case, you'll find the one that can do the job for less in the complete Link-Belt line.

Link-Belt builds a type and size of bucket elevator for every requirement. Included in the 4 basic designs are 13 types of bucket elevators designed to suit a variety of materials. A wide range of sizes on chain or belts is also available.

Other Link-Belt engineering extras: Rigid, jig-built casings are self-supporting requiring only occasional lateral ties depending on height. Periodic inspection is speeded with easy access to both head and boot. Chain or belt tension is maintained at all times with simple screw or gravity take-ups. You can get complete engineering information from the Link-Belt office near you.

LINK-BELT

BUCKET ELEVATORS

LINK-BELT COMPANY: Plants: Chicago, Indianapolis, Philadelphia, Colmar, Pa., Atlanta, Houston, Minneapolis, San Francisco, Los Angeles, Seattle, Toronto, Springs (South Africa), Sydney (Australia). Sales Offices in Principal Cities.

# "A shipyard is a graveyard we need top quality

*says* **INGALLS SHIPBUILDING COMPANY,**
*world-famous shipbuilder, Pascagoula, Mississippi*

At this vast shipyard, Ingalls has 1200 welding machines, and 1000 welders to man them. The Amerclad Welding Cable is run at top amperage 16 to 24 hours a day. It is dragged over razor-edged steel scrap and battered under heavy loads. It comes into contact with fresh welds while they are still red hot, and it is constantly showered with flaming slag from the burners' torches.

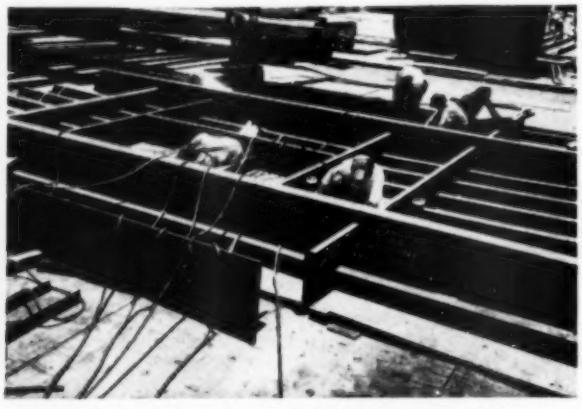
Mr. C. A. Guynn is the Master Mechanic at Ingalls in charge of all maintenance and service. He says this: "We're an all-welded shipbuilder, and we can't stand lost production time due to faulty cable. Our cable has to withstand heat and abuse, and it has to be *flexible*. An extra-flexible cable like Amerclad is easy on the welder's wrists, and it lasts *twice* as long as cables that lack this feature."

This great shipyard uses 60,000 feet of welding cable a year. But whether you use 60,000 feet or 600; whether you need a rugged cable for welding machines, power shovels or electric hand drills—there's a tough Amerclad design to give you the very best service life.

Send the coupon for more information about U·S·S Amerclad.

AMERICAN STEEL & WIRE DIVISION, UNITED STATES STEEL CORPORATION, GENERAL OFFICES: CLEVELAND, OHIO
COLUMBIA GENEVA STEEL DIVISION, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS • TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA., SOUTHERN DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

Ingalls uses lots of Amerclad for portable power tools. Here, it powers a half-inch electric drill used to bore 6-inch shoring timbers.



This is a typical shipyard operating condition. The cable is exposed to all kinds of weather, and dragged over sharp steel plates and beams.

**A STANDARD CABLE FOR**

▼ asbestos wire and cable ▼ shovel & dredge cable
▼ paper & varnished cambric cable
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UNITED STATES STEEL

**U·S·S AMERICAN ELECTRICAL**

# for poor cable—
# products like Amerclad"

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## WIRE & CABLE

USS

**SEND THE COUPON**

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Cleveland 13, Ohio

☐ Please give me more information about Amerclad.
☐ I'd like to talk to your representative.

Name .....

Firm .....

Address .....

City ..... State.....

UNITED STATES STEEL

# Improved AMERICAN Container-Cartridge makes Loading Quicker, Easier!

Constant Cyanamid research in the field has resulted in an improved shipping-loading container-cartridge that's already a favorite for quarry operations.

These convenient 25-lb. cartridges are strapped in bundles of two for easy handling. Clearly printed end labels show in an instant the grade you want. Each cartridge is readily loaded into the hole, and, when you're ready to shoot, there are no cases or boxes to litter the blasting area.

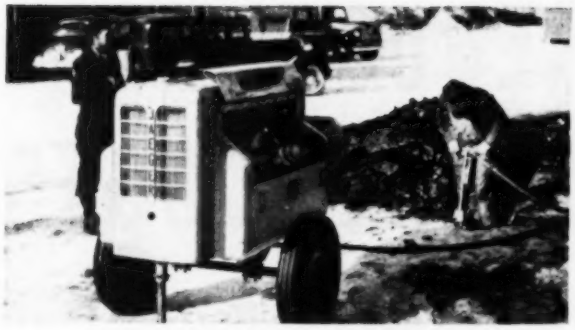
Cyanamid quality control gives you sure firing and good breakage from every American blasting agent. They're available from plants and magazines in key areas throughout the country. Make your next order American.

***Capable field engineers are available at your call***

**High Explosives • Permissibles • Blasting Powder**
**Blasting Accessories**

*AMERICAN Cyanamid COMPANY*

EXPLOSIVES DEPARTMENT
**30 Rockefeller Plaza, New York 20, N. Y.**
*Sales Offices:* Pittsburgh, Pa., Bluefield, W. Va., Scranton, Pa., Chicago, Ill., Pottsville, Pa., Maynard, Mass.



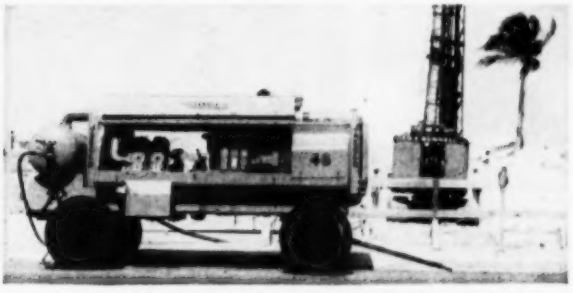
*75 cfm puts full wallop in a heavy duty breaker.*

*With 125 cfm these tools do 30%-40% more work.*

*Three 365's — enough capacity for 4 heavy wagon drills.*

*More Jaeger air speeds many jobs, such as line testing.*

*Tractor mounted and powered, operates two big drills.*



*Ample air for heavy pile hammers, with a Jaeger 600.*

# Only JAEGER has built thousands of air compressors in "new standard" ratings...

**75 • 125 • 185 • 250 • 365 • 600 cfm**

Any compressor that produces 15% to 25% more air than others, without racing, overheating or vibration, must be engineered to higher standards.

Jaeger, alone, has engineered these new standards into thousands of compressor units, whose design features are not found in any other line of portable compressors, *old or new*:

- Balanced 2-stage "W" type compressor in every model from 75 to 600 ft.
- 75% to 100% larger valves; larger intercoolers and air receivers.
- Positive force feed lubrication, standard.
- Relief valve for automatic drainage, standard.
- Automatic "Fuel Miser" standard on all models where speed control means worthwhile fuel saving.
- Bigger clutches than any other compressors; bigger engines operating at conservative speeds.

**Ask Your Jaeger Distributor to Prove This:** At prices actually less than those still asked for "old standard" compressors, Jaeger compressors provide 15% to 25% greater volume of air at the lowest known cost per cubic foot.

## THE JAEGER MACHINE COMPANY

**602 Dublin Avenue, Columbus 16, Ohio**

Pumps • Concrete Mixers • Truck Mixers • Aggregate Spreaders • Concrete Spreaders and Finishers

# These Five *Pulverator* Features Help REDUCE AGLIME COSTS

PULVERATOR Hammermills

## 1. SQUARE HIT

A square hit is the most powerful breaking blow. *Pulverator* hammermills are designed to utilize this important principle of impact crushing. Feed is hit squarely by flat hammers.

## 2. MULTI-IMPACT

Hammers break and repeatedly smash the material squarely against involute breakers—resulting in a minimum of wear on breaker plates. *Pulverators* may be operated with or without grate bars and at various speeds.

## 3. HIGH PRODUCTION

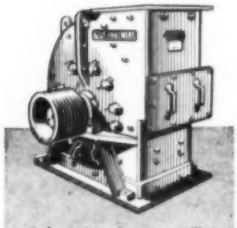
The multi-impact principle produces more fines ahead of the grate bar section. With more fines passing the grate, you get high production at lower cost. Also — power requirement and maintenance are reduced.

## 4. QUALITY PRODUCT

*Pulverator* hammermills break material into a uniformly distributed cubical product. The product analysis can be varied by changing grate bar spacing and operating speed.

## 5. RENEWABLE PARTS

Liners, breaker plates, hammers, hammer arms and individual grate bars can be replaced separately. Hammers and grate bars are reversible.



***Pulverator* hammermills are built in five sizes, capacities 2½ to 160 tph. Get more facts from the A-C representative in your area, or write for *Pulverator* Bulletin 07B6265A. Allis-Chalmers, Milwaukee 1, Wis.**

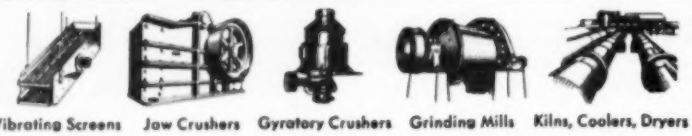
A-4032

# ALLIS-CHALMERS

A-C ALLIS-CHALMERS

*Pulverator* is an Allis-Chalmers trademark.

**Sales Offices in Principal Cities in the U. S. A. Distributors Throughout the World.**



Vibrating Screens · Jaw Crushers · Gyratory Crushers · Grinding Mills · Kilns, Coolers, Dryers

# THE INTERNATIONAL NICKEL COMPANY, INC.

*offers*

**To Manufacturers and Users of Processing Equipment for production of cement, sand, gravel, crushed stone, lime, gypsum and other non-metallic minerals . . .**

## practical help in solving abrasion problems . . . based on many years' experience in minimizing wear through proper application of

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Simply fill in and return the coupon below.

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**THE INTERNATIONAL NICKEL COMPANY, INC.** 67 WALL STREET NEW YORK 5, N.Y.

*Homoflex Hose—More use per dollar*

*Homoflex Hos e per dollar*

*Homofle ollar*

*Hon er dollar*

*Homoflex Ho e per dollar*

**FLEXIBLE, LIGHT, BUT RUGGED AND STRONG . . .** Yes, you save money because Homoflex lasts longer. It's easier to coil and uncoil . . . no pre-set twist . . . no kinking . . . easier to carry and drag. "Flexible as a Rope". Workmen like it. Cover and tube are inseparable and hosewall is strong and safe, for handling air, water, other fluids and gases. Ask the R/M distributor for Bulletin 6879. He'll tell you about other R/M hose types for steam, oil, suction, chemicals—from small 1/4" size, to huge dredging hose big enough for a man to crawl through . . . also how you get MORE USE PER DOLLAR with R/M transmission, and conveyor belt, and V-belts.

RM

MANHATTAN RUBBER DIVISION — PASSAIC, NEW JERSEY

**RAYBESTOS-MANHATTAN, INC.**

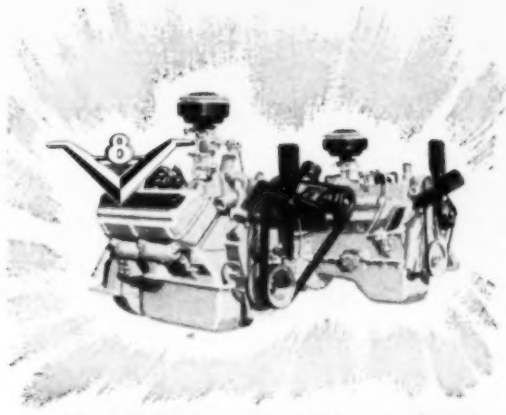
Other R/M products include: Industrial Rubber • Fan Belts • Radiator Hose • Brake Linings • Brake Blocks • Clutch Facings
Asbestos Textiles • Teflon Products • Packings • Sintered Metal Parts • Bowling Balls

# ANNOUNCING NEW

# DODGE "Job-Rated" TRUCKS

## Brilliant new design opens new era in trucking!

**Compare their new comfort! Test their new handling ease!**
**See their new low work-saving design!**



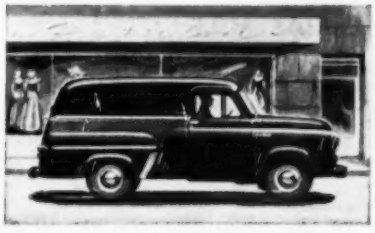
**2 GREAT ENGINE LINE-UPS!** In addition to cost-cutting 6's, Dodge now offers the most powerful V-8 engines of all leading trucks! Available in 1½-, 2-, and 2½-ton models . . . standard in 2¾-, 3-, 3½-ton! Revolutionary hemispherical combustion chamber for high efficiency! Get free book on engine efficiency and its importance to you at your Dodge dealer's!

**OVER 75 NEW FEATURES!** Spectacular low-built lines! New increases in G.C.W.! New cab sealing against dust, drafts! Nonskid running boards!

**PLUS** famous Dodge features like . . . completely rustproofed sheet metal . . . moistureproof ignition! Truck-o-matic transmission with gýrol Fluid Drive, available!

**New! Even greater values . . . yet still priced with the lowest!**

**New! Sharper Turning!** New steering system for the shortest turning of all leading trucks! New shorter conventional tractors! New, one-piece windshield! More total vision area than any other popular make!

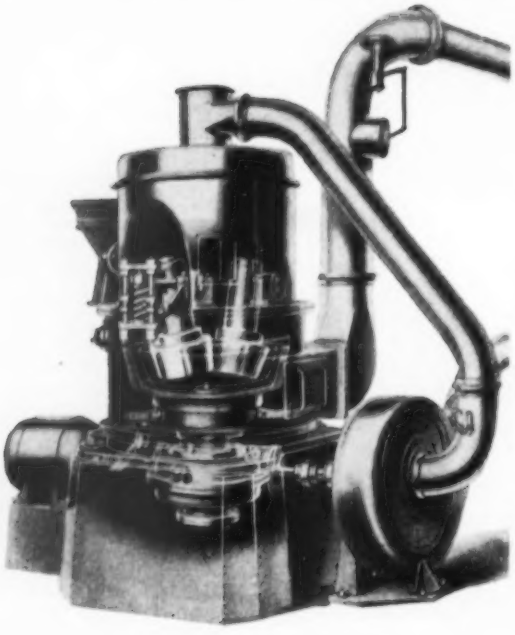


**New! Smarter Styling!** New colors! New flow-line design, featuring integral fenders, sparkling chrome! New two-tone interior styling! New wider doors! New easy-chair seats! New instrument panel.

**New! Lower Lines!** Pick-up and panel floors knee-high for loading ease! Lower running board for easier entry! Lower hood for greater visibility! New, low center of gravity for road-hugging stability!

**SEE YOUR FRIENDLY DODGE DEALER!**

# If it's a Fine Grinding Job-

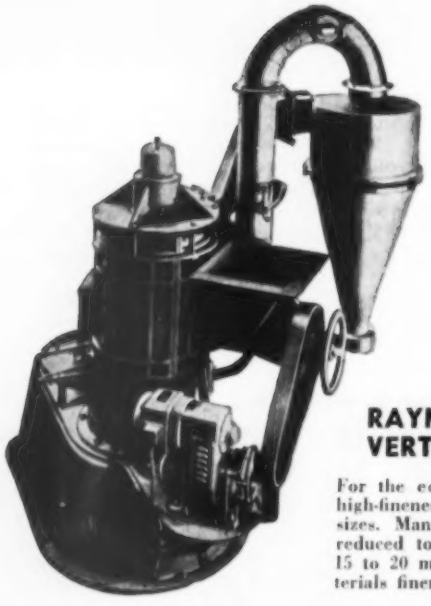


## RAYMOND BOWL MILL

THIS modern, high-availability, direct firing unit handles coal of any grade, grindability or moisture content . . . and is capable of continuous 24-hour operation for extended periods without shutdowns.

Its responsiveness to load changes . . . ease of control and adjustment while running . . . smooth noiseless operation . . . record low maintenance . . . are advantages that help to reduce overall cement production costs.

Today, there are over 275 Bowl Mill installations with a total rated capacity of more than 12 million tons annually, firing rotary kilns in the cement, lime and dolomite fields alone.



## RAYMOND VERTICAL MILL

For the economical production of high-fineness materials in sub-sieve sizes. Many types of products can be reduced to 95% to 99% finer than 15 to 20 microns, and some soft materials finer than 5 to 10 microns.

## MECHANICAL AIR SEPARATOR

Equipped with revolving whizzer blades to maintain maximum efficiency and uniformity in classifying powdered products. When used in closed circuit grinding operations, the Raymond Separator increases capacity of the mill unit from 25% to several hundred per cent.

*Bulletins* ON REQUEST

# COMBUSTION

RAYMOND DIVISION

# RAYMOND has a Mill for it

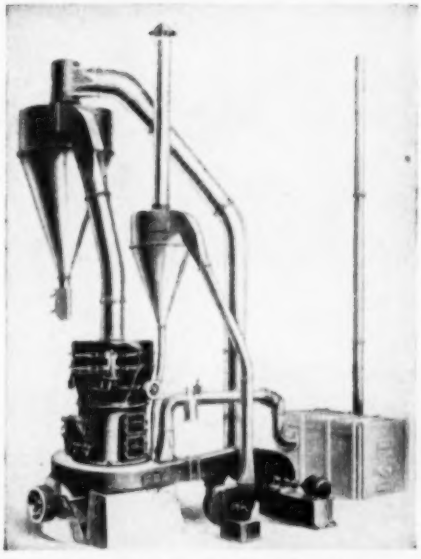
RAYMOND equipment offers a wide selection of pulverizing and separating units of the most modern type to meet your production requirements.

***Capacities:*** Raymond Mills are built in a full range of sizes, producing from a few hundred pounds per hour up to 30 tons or more per hour of finished material with the Super Roller Mills.

***Finenesses:*** Equipped with Air Separation, Raymond units may be adjusted to deliver uniform materials from 20-mesh up to 99.9% passing 325 mesh or finer.

***Moisture Removal:*** With the use of Flash Drying accessories, Raymond Mills can do a complete job of drying, grinding and classifying in one continuous, automatic operation.

Raymond installations are practically made-to-order, so that the type and size of mill with collectors and piping are designed to fit your plant layout and meet your production needs.

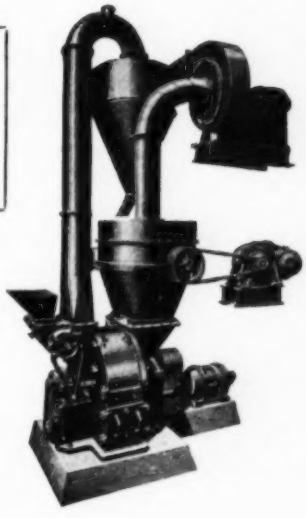


**RAYMOND ROLLER MILL**

Shown with double whizzer separator and flash drying accessories for removing moisture while grinding the material.

## ENGINEERING SERVICE

Our more than sixty-five years of experience is available to you. Write us in detail about your grinding problem . . . and let us recommend the proper equipment to do the job.

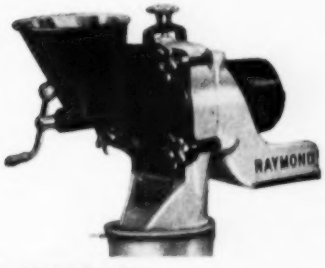


**RAYMOND IMP MILL**

Equipped with Whizzer-type separator for finish grinding operations on medium soft materials.

**RAYMOND CAGE MILL**

with Flash Drying System for disintegrating, drying, cooling and delivering a uniform finished product.




**RAYMOND LABORATORY MILL**

A complete motored unit for test runs and for the development of new products.

# ENGINEERING, INC.

**1321 NORTH BRANCH STREET • CHICAGO 22, ILLINOIS**

***Sales Offices in Principal Cities***

# DU PONT CD (Condenser Discharge) BLASTING MACHINE

## Promotes Safety . . . Simplifies Secondary Blasting in Southern Limestone Quarry

Du Pont CD-48 Blasting Machine.

**BEFORE FIRING SHOT** consisting of 400 block holes.

**AFTER FIRING SHOT**... easy digging for the shovel.

For greater safety and efficiency in firing secondary blasts, the Belgrade, North Carolina quarry of the Superior Stone Co. of Raleigh, North Carolina uses a Du Pont CD-48 (Condenser Discharge) Blasting Machine. It is desirable to fire as many "pop" shots as possible at one time, and one secondary blast may include up to 400 holes.

Such shots are purely routine with a Du Pont CD-48 Blasting Machine. Just connect the caps in parallel series, with about 40 caps in each series. This machine will actually fire 1,200 caps, and you do not need to erect and maintain any shooting lines about the quarry.

Du Pont CD Blasting Machines are now available in four sizes: CD-12, CD-24, CD-32 and CD-48. Their capacities range from 20 caps in straight series to 1,200 in parallel series. They fill the need for a lightweight, portable source of power and eliminate costly permanent shooting lines.

All CD Blasting Machines are characterized by (1) extremely high capacity for their weight and size, (2) absence of moving parts, (3) elimination of the human element of mechanical-type machines, (4) a test pilot light, and (5) a wiring and switching system with important safety features.

Ask the Du Pont Explosives representative in your area for complete information about this newly developed, much improved blasting machine. It may well be an accessory you can put to efficient use in your own quarry. E. I. du Pont de Nemours & Co. (Inc.), Explosives Department, Wilmington 98, Delaware.

**DU PONT EXPLOSIVES**

*Blasting Supplies and Accessories*

DU PONT

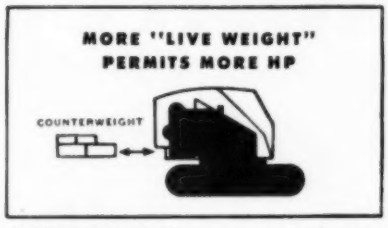
BETTER THINGS FOR BETTER LIVING...*THROUGH CHEMISTRY*

***Before you buy:***

# COMPARE NET HP!

This LS-85, despite tough, big-chunk rock, has been operating over 1200 hours without requiring one replacement part!

## Don't judge available power by engine model only ... NET hp is what adds up to extra profit!




COMPARE shovel-cranes with and without counterweight. That test spotlights the size, weight and heft built into the working parts and structural members. You'll find the LS-85 has more "live weight" than comparable ¾-yard shovel-cranes.

Greater net horsepower assures faster, deeper digging. Bigger loads are handled without stalling. For example: the diesel driven heavy-duty ¾-yard LS-85 packs 92 net hp. That's more power than comparably-sized competitive rigs can safely use. It's why the LS-85 has more digging force behind its bucket teeth . . . why it cuts so smoothly . . . hoists and swings without a pause.

Use of greater net hp is practical because of all-welded, stress-relieved construction *and extra "live weight."* This *extra live weight* is in heavier, sturdier working parts and structural members—rather than a heavier counterweight. All this means year-after-year service and low maintenance costs. So whatever you do, don't compare power by the engine model only—CHECK *NET* HP.

For more facts on the LS-85, ask your distributor, or write for Catalog 2317. For the complete line, request Catalog 2373.

**LINK-BELT SPEEDER CORPORATION**
**Cedar Rapids, Iowa**

13,240

# LINK-BELT SPEEDER
## CORPORATION

**BUILDERS OF A COMPLETE LINE OF CRAWLER, TRUCK AND WHEEL-MOUNTED SHOVEL-CRANES**

**FACTORY-TRAINED DISTRIBUTOR SALES AND SERVICE SPECIALISTS ...*EVERYWHERE***

SINCE 1856
HUMBOLDT
Mines Equipment, Mineral Dressing Plants, Crushing and Grinding Machinery, Cement Factories, Metallurgical Works, Coal Preparation Plants, Steel Constructions for Buildings and Bridges.
SINCE 1864
DEUTZ
Otto-, Gas-, Diesel-Engines for Every Purpose of Two- and Four-Stroke design, Output range 3-1650 H.P. Cooled by water or air, Diesel-powered tractors, Diesel locomotives, Gas producer plants.
SINCE 1864
MAGIRUS
Trucks and busses driven by air-cooled DEUTZ Diesel engines, Vehicles for municipal services, Fire ladders, fire engines, Fire fighting water trucks, Two-wheeled ladders, Fire fighting equipment.
KLÖCKNER-HUMBOLDT-DEUTZ AG·KÖLN

**KLÖCKNER - HUMBOLDT - DEUTZ A.G.** **KÖLN - DEUTZ, GERMANY**

GM DIESEL
CASE HISTORY NO. IA5-40

**OWNER:** Flomaton Gravel Company, Flomaton, Alabama

**INSTALLATION:** GM 4-71 Diesel powers a Pekor 6" centrifugal pump on sand dredge. Pumps 400 to 450 feet to discharge table with 40-foot head. Engine replaced another make Diesel in 1947.

**PERFORMANCE:** Owner reports repowering boosted production 50% with no increase in fuel costs. He now pumps 35 to 40 cu. yds. per hour, operating 8 hours a day, year around. GM Diesel has required no repairs in six years.

*It pays to STANDARDIZE on*

GM
GENERAL MOTORS
DIESEL POWER

# PUMPS 50% MORE SAND USES NO MORE FUEL

After seeing what this engine did, Owner A. R. Bethea powered two other dredges with General Motors Diesels. Besides being steady, dependable producers, GM Diesels' compactness and lighter weight permitted him to build lighter and less expensive dredges.

A GM Diesel engine boosts production on all kinds of heavy-duty jobs because, with power on *every* piston downstroke, it delivers smoother, steadier power. Its simple, rugged design keeps your equipment on the job and working at top speed. It has no troublesome high pressure fuel lines to cause costly delays.

And when service is needed, you'll find the cost surprisingly low. GM Diesel parts cost less. They're readily available everywhere. They're quick and easy to replace. If you want to boost production and reduce operating expense, find out about GM Diesel power. Contact your distributor or write us for complete information.

**DETROIT DIESEL ENGINE DIVISION**
GENERAL MOTORS • DETROIT 28, MICHIGAN
Single Engines . . . 16 to 275 H.P. Multiple Units . . . Up to 840 H.P.

# For the Best Buy

Hewitt-Robins designs and manufactures a complete line of quality hose—one to meet the particular requirements of every hose application.

Hewitt-Robins Hose has proved its superiority in the field—in case after case, actual performance records prove that it's safer, lasts longer, is more economical.

So for the best buy in hose . . . always see your local Hewitt Rubber Distributor.

**HEWITT-ROBINS**

EXECUTIVE OFFICES, STAMFORD, CONNECTICUT

# Specify Hewitt-Robins

**CHECK FOR INFORMATION ABOUT THESE JOB-TESTED PRODUCTS FOR YOUR OPERATION**

**CONVEYORS:**
- ☐ —Belt
- ☐ —Sectional
- ☐ —Mine
- ☐ —Shuttle
- ☐ —Vibrating

**BELTING:**
- *☐ —General Conveyor
- *☐ —Raynile®
- *☐ —Elevator
- ☐ —Woven Wire
- ☐ BUCKET ELEVATORS
- ☐ IDLERS

**SCREEN CLOTH:**
- ☐ —General
- ☐ —Electrically Heated

**VIBRATING SCREENS:**
- ☐ General
- ☐ Dewaterizers
- ☐ Heavy-Duty Scalpers
- ☐ Slip Lawn

**HOSE:**
- *☐ Twin-Weld®
- *☐ Servall®
- *☐ Fire
- *☐ Steam
- *☐ Air
- *☐ Water
- *☐ Pinch-Valve
- *☐ Flexible Rubber Pipe
- ☐ MECHANICAL FEEDERS
- ☐ STACKERS
- *☐ GROOVED PULLEY LAGGING
- ☐ SELF-UNLOADING BOATS
- ☐ DESIGN AND CONSTRUCTION OF COMPLETE MATERIALS HANDLING SYSTEMS

*For immediate information about these industrial rubber products, call your Hewitt Rubber Distributor. (See "Rubber Products" Classified Phone Book.)

**Hewitt-Robins Incorporated**
**666 Glenbrook Road**
**Stamford, Connecticut**

NAME

TITLE & COMPANY

STREET ADDRESS

CITY PO ZONE STATE

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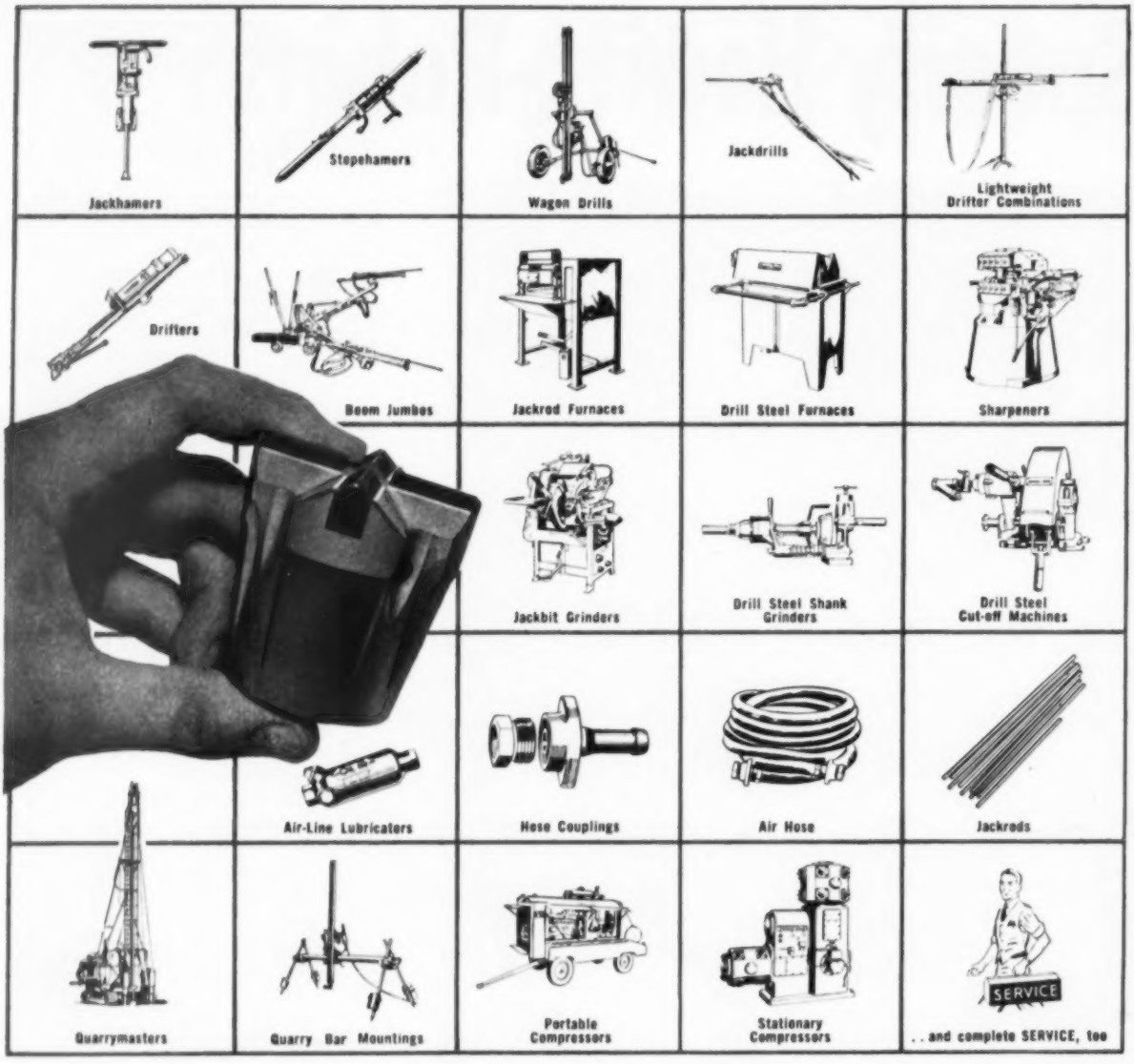
**DOMESTIC DIVISIONS:** Hewitt Rubber • Robins Conveyors • Robins Engineers • Restfoam
**FOREIGN SUBSIDIARIES:** Hewitt-Robins (Canada) Ltd., Montreal • Hewitt-Robins Internationale, Paris, France • Robins Conveyors (S. A.) Ltd., Johannesburg • **EXPORT DEPARTMENT:** New York City.




*Behind the Carset Jackbit*

## A COMPLETE LINE OF ROCK DRILLING MACHINERY

Ingersoll-Rand supplies *everything you need* for drilling rock. That's why you can depend on I-R for a completely coordinated line of equipment that's designed to let you take full advantage of the tremendous savings made possible by longer-lasting, faster-drilling Ingersoll-Rand Carset Jackbits.

What's more, this complete I-R line is backed by 80 years of specialized experience in designing, building, applying and servicing rock drill equipment — for mining, tunneling, quarrying and construction work of all kinds.

Whatever your rock drilling problems may be, your I-R representative is thoroughly qualified to help you solve them.

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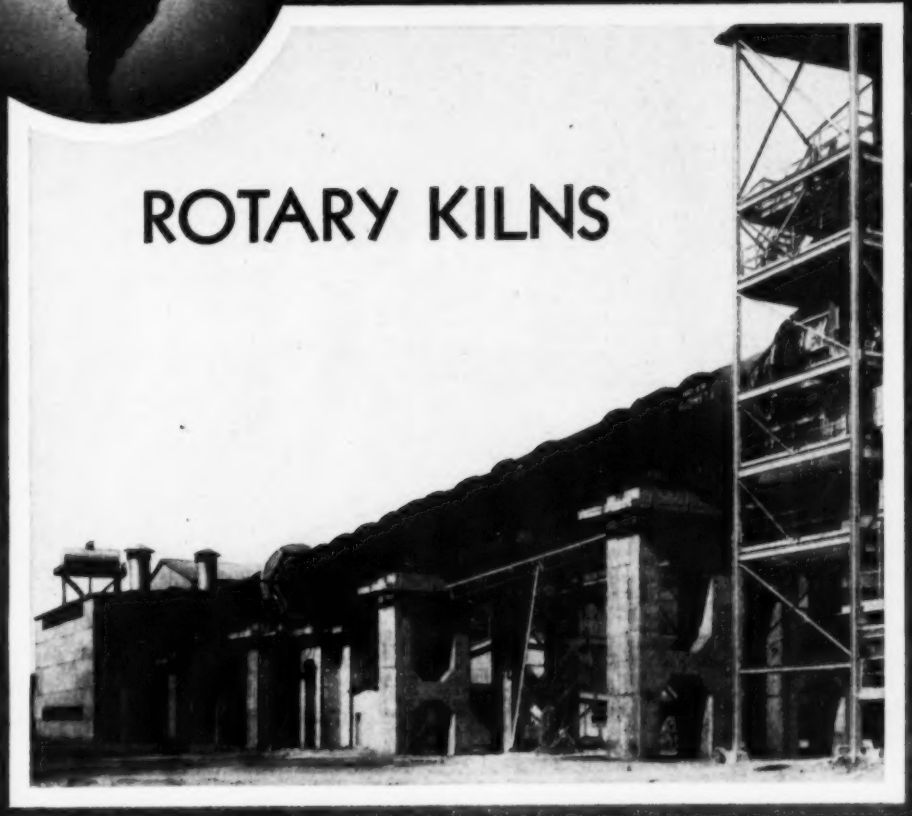
ROCK DRILLS • COMPRESSORS • AIR TOOLS • CENTRIFUGAL PUMPS • TURBO BLOWERS • CONDENSERS • DIESEL AND GAS ENGINES

# SMIDTH



## ROTARY KILNS

Smidth machinery has been supplied to over 70 countries of the world including 1000 rotary kilns and 5000 grinding mills, plus auxiliary machines such as coolers, agitators, washmills, pumps, conveyors, packers, separators, etc. for use in Cement, Lime and Ore plants.

*For Smidth Machinery apply to:*

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105, Piccadilly,
London, W. 1, England

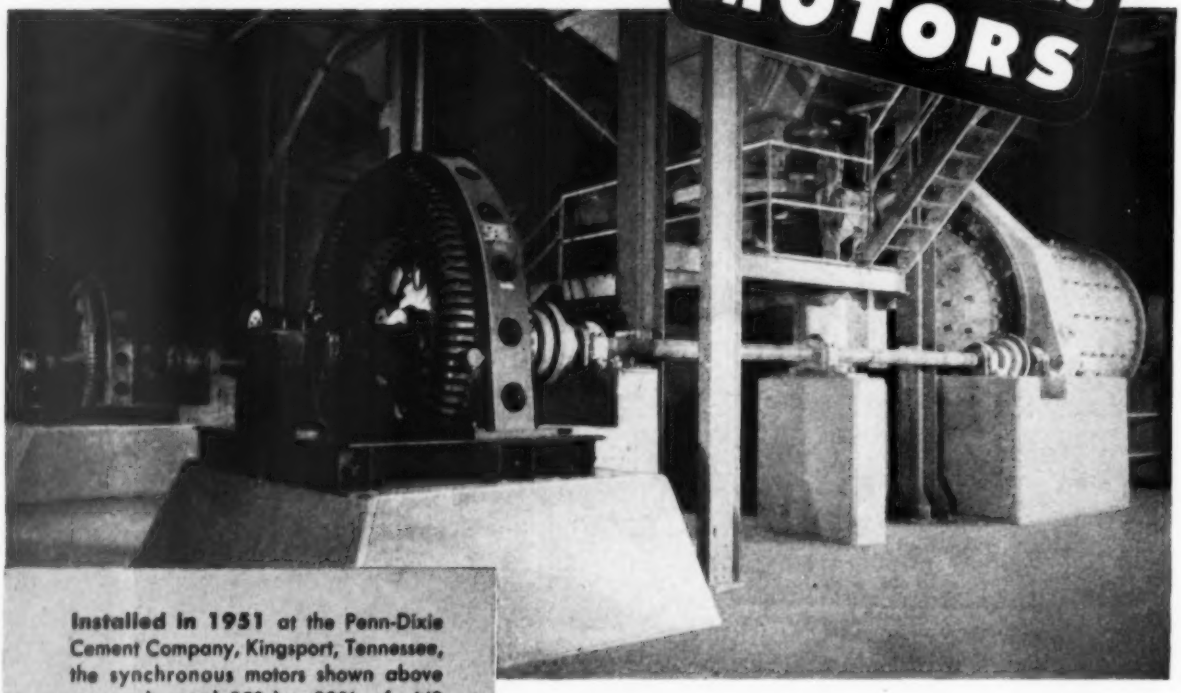
F. L. Smidth & Cie France
80 Rue Taitbout
Paris (9e) France

F. L. Smidth & Co. of Canada, Ltd.
11 West 42nd Street
New York 36, N. Y.

F. L. Smidth & Co. (Bombay) Ltd.
42 Queen's Road
Bombay, India

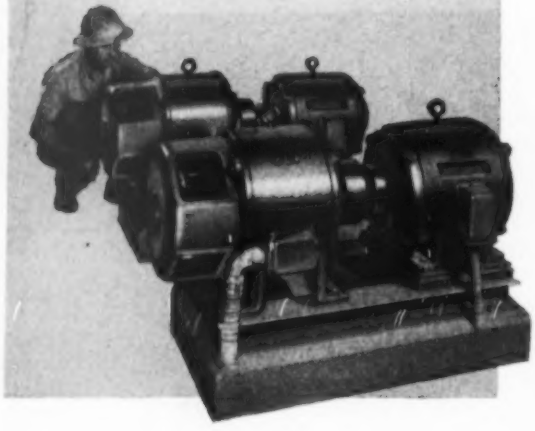
# Built for a Long Grind

ALLIS-CHALMERS
**Synchronous MOTORS**



**Installed in 1951** at the Penn-Dixie Cement Company, Kingsport, Tennessee, the synchronous motors shown above are each rated 350 hp, 80% pf, 440 volts, 180 rpm.

The 8 by 12-ft ball mill preliminators were furnished by Allis-Chalmers, along with the 15-kw m-g sets (shown below) which supply the excitation for the grinding mill motors.



**Here are three reasons why Allis-Chalmers grinding mill motors help keep your mills grinding economically year after year:**

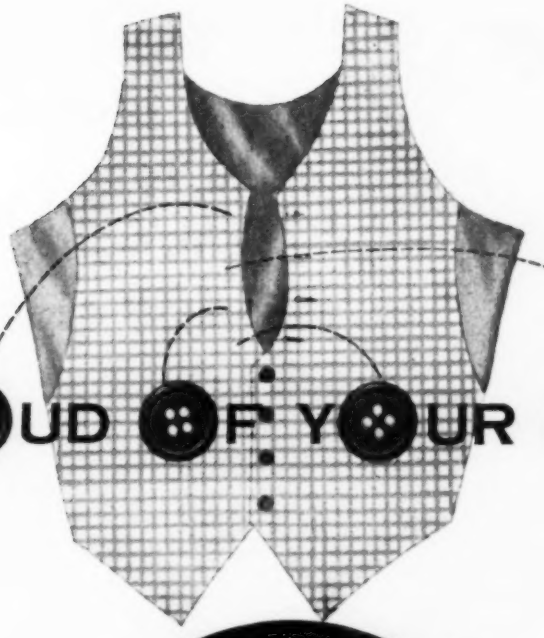
**Each motor** is engineered for its job. A-C's half century of experience building electrical equipment *and* processing machinery assures torque and other operating characteristics tailored to the individual installation requirements.

**Time-proved** basic design features contribute to long life and trouble-free operation. These are described in detail in Bulletin 05B7648.

**Adequate** manufacturing, inspection and testing facilities insure that each motor will be built exactly as specified.

For more information on motors that minimize maintenance and down time, call in your A-C representative, or write for illustrated Bulletin 05B7648. Allis-Chalmers, Milwaukee 1, Wisconsin. A-4088

**ALLIS-CHALMERS**



# PROUD OF YOUR PRODUCT?

## Prove it with CHASE MULTIWALL Paper Bags

Prove it to Your Distributors and Dealers...

Prove it to Your Consumers

Prove it to Your Balance Sheet

Are you proud of the high quality of your rock products?

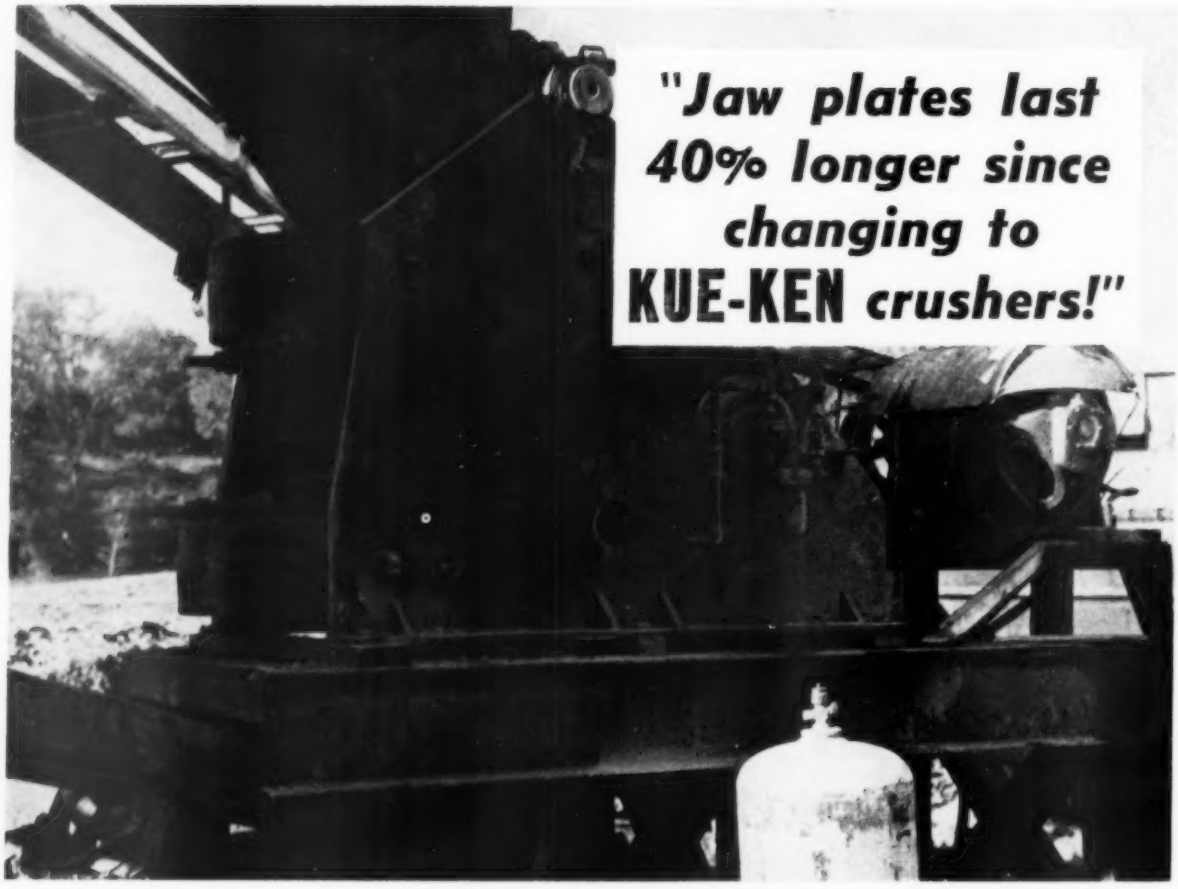
You *can* give *visible* evidence of superiority by packaging in CHASE Multiwall bags. This *preferred* bag is backed by 107 years of CHASE experience...experience in developing the finest material and workmanship...experience in fine printing...experience in Multiwall bag manufacture that assures CHASE customers of QUALITY bags on every order.

### IT'S THE PACKAGE THAT GIVES YOU THESE EXTRAS...

1. Better appearance.
2. Clean, colorful brand printing.
3. More sales appeal.
4. Better protection for your product.
5. A bag designed for your specific problem.
6. Better acceptance of your brand.

SINCE 1847

**CHASE BAG COMPANY** 309 WEST JACKSON BOULEVARD • CHICAGO, ILLINOIS



# "Jaw plates last 40% longer since changing to KUE-KEN crushers!"

Hard river gravel is especially rough on jaw plates as any operator knows. A California aggregate company* producing crushed gravel, aggregate and ready-mix with 10"x36" overhead eccentric type crushers used several sets of jaw plates a year. To cut this heavy expense they switched to their first KUE-KEN . . . the crusher that "crushes without rubbing." Immediately their savings mounted . . . jaw plates lasted 40% longer, capacity per inch of jaw width jumped 20%, power consumption dropped 20%!

The outstanding results from this first KUE-KEN led to the purchase of the 30"x12" KUE-KEN pictured above. It has been in operation for several years. Recently they installed a 36"x10" . . . their third!

Here is but one of many examples of user satisfaction expressed in repeat orders. We suggest that you investigate Kue-Ken today . . . crushers for every need.

***Name furnished on request.**

***Write for Descriptive Folder***

**KUE-KEN pronounced "QUE-KEN"**
**U. S. and foreign patents pending**

**DEALERS: LUND MACHINERY CO., Salt Lake City, Utah; CLOSNER EQUIPMENT CO., San Antonio, Texas; WASHINGTON MACHINERY & STORAGE CO., Seattle, Wash.; CONSTRUCTION EQUIPMENT CO., Spokane, Wash.; CONTRACTORS EQUIPMENT CO., Portland, Ore.; MILLER MACHINERY CO., Missoula, Mont.; ANAHUAC MACHINERY CO., Mexico City, Mexico; UNIVERSAL EQUIPMENT CO., Vancouver, B. C.**

**643 CHESTNUT • OAKLAND 20, CALIF.**

**STRAUB MFG. CO.**

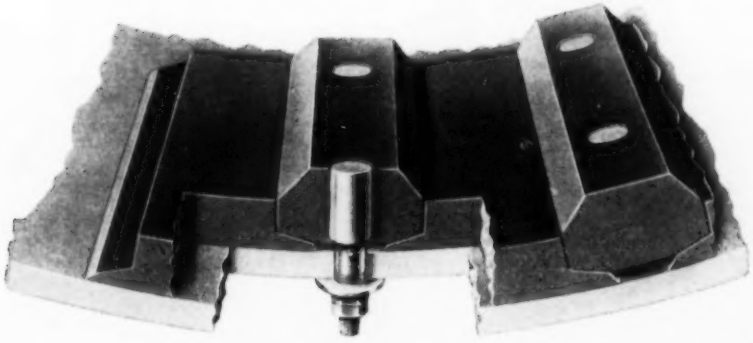
| | | |
|---|---|---|
| Kue-Ken Jaw Crushers | Revolving Screens | Rib Cone Ball Mills |
| Kue-Ken Gyracone Crushers | Classifiers | Concentrating Tables |
| Overhead Eccentric Crushers | Feeders | Vibrating Screens |

**Pennsylvania Crusher Co.,** Exclusive Licensed Eastern Manufacturer and Distributor. Broad and Arch Streets, Philadelphia, Penn.

**Sir W. G. Armstrong Whitworth & Co. (Ironfounders) Ltd.** Authorized Licensed Manufacturer and Distributor. Close Works, Gateshead-upon-Tyne, England.

# You can cut costs

## in your grinding operation with U·S·S Lorain Rolled Plate Linings



- **Linings are in easy-to-handle sections, accurate sizes to permit quicker installation**
- **Plates can be heat-treated to compensate for localized wear**
- **Correct sizes make tighter joints . . . eliminate shell wash**
- **Lift bars are designed for correct cascade action . . . height of lift varied according to conditions**
- **Bolt supports located near the bottom of the bar . . . last for life of the lining**

● You can do more and better grinding, for less money, with U·S·S Lorain Rolled Plate Linings. The output of your mill increases when the usable diameter increases, and this is just what happens when rugged Lorain *rolled steel* plates are used instead of ordinary castings. Lorain Liners can be much thinner due to their superior strength. Their lighter weight simplifies handling.

You save money with U·S·S Lorain Rolled Plate Linings because they are readily installed and require less maintenance. The plates are accurately made and are in easy-to-handle sections for ready use. Severe localized wear at feed or discharge end of the mill can be balanced by heat-treating. Lorain Liners are so durable that they remain serviceable until they're almost paper thin. You benefit from the use of the entire plate . . . there is less waste, longer wear. Mill down-time will be reduced and so will your upkeep costs.

The accurate size of U·S·S Lorain Rolled Plate Linings assures tight fit between the ends of the plates and between plates and lift bars, eliminating shell wash.

U·S·S Lorain Rolled Plate Linings are available—in the diameter, length and thickness best suited to your operating conditions—through leading mill manufacturers whose names will be furnished upon request.

**U·S·S GRINDING BALLS** are carefully made of special composition steel to take long, rough wear evenly. Samples from each production lot are thoroughly tested to make sure of surface hardness and maximum hardness penetration. They come in eleven sizes from ¾" to 5". For further information just return the coupon below.

United States Steel Corporation
Room 2817-P, 525 William Penn Place
Pittsburgh 30, Pa.

Without obligation on my part, please send me your FREE booklet on U·S·S Grinding Balls.

Name .....

Company .....

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UNITED STATES STEEL CORPORATION, PITTSBURGH · COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
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# U·S·S LORAIN ROLLED PLATE LININGS AND U·S·S GRINDING BALLS

USS

3-2023

UNITED STATES STEEL

# "After 11,000 Hours, the Lack of Bearing Wear was Amazing"...

*says G. A. Krebs, Newark, Ohio*

Mr. Krebs is convinced that Sinclair SUPER TENOL® is the best motor oil the G. Alfred Krebs Co. has ever used. *And well he might* – for his contracting firm has the *figures to prove it.*

Mr. Krebs writes, "We recently overhauled one of our ¾ yard shovels and the condition of the engine amazed us. Though it had been in service more than 11,000 hours, the interior was exceptionally clean and free of deposits. Engine wear was unbelievable; there was no appreciable wear to main bearings and wear of rod bearings averaged about 0.001 inches. Cylinder wall wear was even – averaged about 0.008 inches."

Mr. Krebs mentions another point of interest: "We have found that SUPER TENOL performs equally well in *all* of our equipment. Regardless of the type or age of equipment, this oil gives superior performance. It has helped reduce our maintenance costs and prolonged engine life in diesels as well as gasoline engines."

Apply these facts to *your* equipment – figure the savings in time and money and you'll see it will pay you to switch to Sinclair SUPER TENOL. Contact your local Sinclair Representative or write Sinclair Refining Company, 600 Fifth Avenue, New York 20, N. Y.

*Prolong Engine Life with...*

**SINCLAIR SUPER TENOL**

# U.S. ROYAL

## CON-TRAK-TOR

FULL LUG

# Pulls Down Haulage Costs!

Assign your rugged haul-loads *here!* This new Con-Trak-Tor is built with exclusive full-width lugs for *super* truck *traction*. It's got *triple protection* against impact—extra rubber between plies, double shock-pads, rock-resister cap-plies. It pulls and *works*, saves and *pays* like no other off-road tire! **Also available in Nylon for heaviest duty.**

**Want proof? See or phone your U. S. Royal Dealer *Today!***

**Specialized by U. S. ROYAL to do your jobs better!**

| U. S. ROYAL FLEETMASTER | U. S. ROYAL ROAD TRACTION | U. S. ROYAL LUG TRACTION |
|---|---|---|
| Smooth rolling *on* the road, superior traction *off*. 70% more tread depth! | New steering ease where most hauling is on-road at reasonable speed. | Best for high traction at low speeds off the road or on unimproved roads. |

**FREE**—NEW 64-PAGE BOOKLET *SEND COUPON!*

U. S. Royal Truck Tire Department,
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Please send me your new booklet of latest tire information, engineering and service aids, weight charts, load and inflation tables, etc.

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**U. S. ROYAL TIRES** *Product of* **UNITED STATES RUBBER COMPANY**

# CRAWLING is often necessary but for SPEED

## there's nothing like rolling on WHEELS!

Under many conditions crawlers are the most practical type of mounting. BUT, very often traction is not much of a problem for shovels, cranes and draglines and you can make terrific savings by using a high speed LIMA PAYMASTER on wheels.

The picture at the right shows a LIMA Type 34-M PAYMASTER crane, equipped with a 35-ft. boom, unloading coal from a barge at an eastern Pennsylvania power plant. Note that it is mounted on an undercarriage with 12 rubber tired wheels.

This LIMA 34-M is a natural for industrial plants . . . it offers fast mobility between widely separated jobs, traveling up to 8.24 MPH on a 2.75% grade and 0.94 MPH on a 22.5% grade with four-speed transmission. Just one man is needed to operate it and a single engine powers the crane motions and propels the carrier. It can lift up to 20 tons and is readily convertible to a dragline.

If you would like to know more about how the LIMA Type 34-M PAYMASTER will pay off with speed and efficiency for your operations, drop a note to—

**LIMA DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD**

**LIMA**

SHOVELS • CRANES
DRAGLINES • PULLSHOVELS

BALDWIN BLH LIMA-HAMILTON
Construction Equipment Division

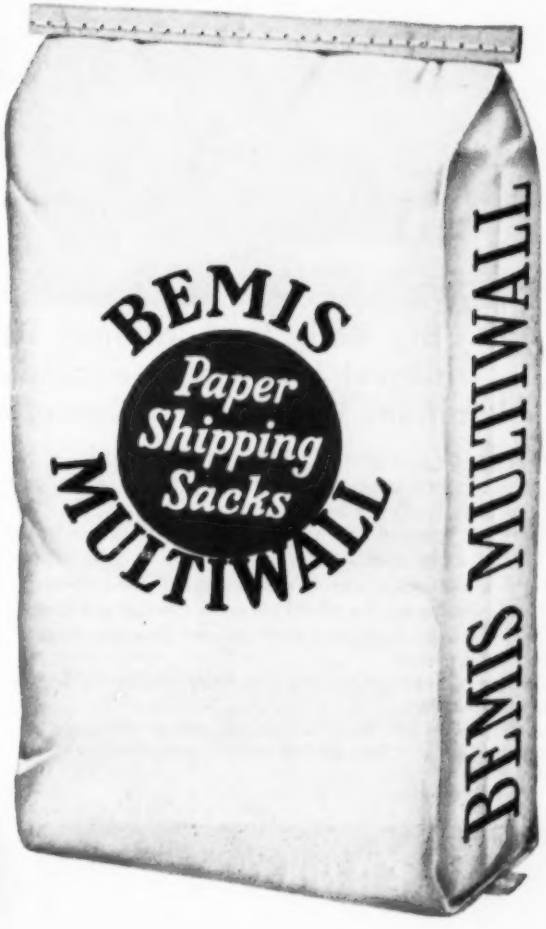
**BALDWIN-LIMA-HAMILTON CORPORATION**
**Construction Equipment Division**
**LIMA, OHIO, U.S.A.**

# Want Proof?

## then trust your own eyes!

And you will know that Bemis color printing of brands on multiwall paper bags is bright, crisp, color-true . . . the kind that will boost the selling power of *your* brand.

Ask your Bemis Man to show you typical Bemis multiwall printing. Trust your own eyes.




Bemis

General Offices—St. Louis 2, Mo.
Sales Offices in Principal Cities

# Big Red TD 24 Pioneers New Frontier

**GRAVEL FROM RIVERBED** is hauled out with scrapers by International TD-24s. More than 216,000 cubic yards of gravel will be used in the construction of the tunnels, powerhouse, and transmission line—which represents only about one-sixth of the entire project.

## 59 "Big Red" International TD-24 crawler tractors spearhead largest integrated engineering program in history for Aluminum Company of Canada, Ltd., on Project British Columbia

A fleet of 59 hard-hitting International TD-24s is blazing a new frontier across 5,000 square miles of wilderness in British Columbia.

Here are some of the jobs the project includes, in an area that even now hasn't been completely mapped:

- **building the largest sloping clay core dam in the world**
- **driving a subway-size tunnel ten miles through a mountain**
- **blasting out an eight-story powerhouse two blocks long inside solid rock**
- **erecting a transmission line fifty miles long over a jagged mountain range**
- **raising the world's largest aluminum smelter and a new port city at Kitimat where 50,000 people may eventually live and work**

All rock, clay, and aggregates needed are available at the construction sites—and that's where the Big Red TD-24s really shine—in the quarry, the clay pits, and even dredging gravel from the icy rivers.

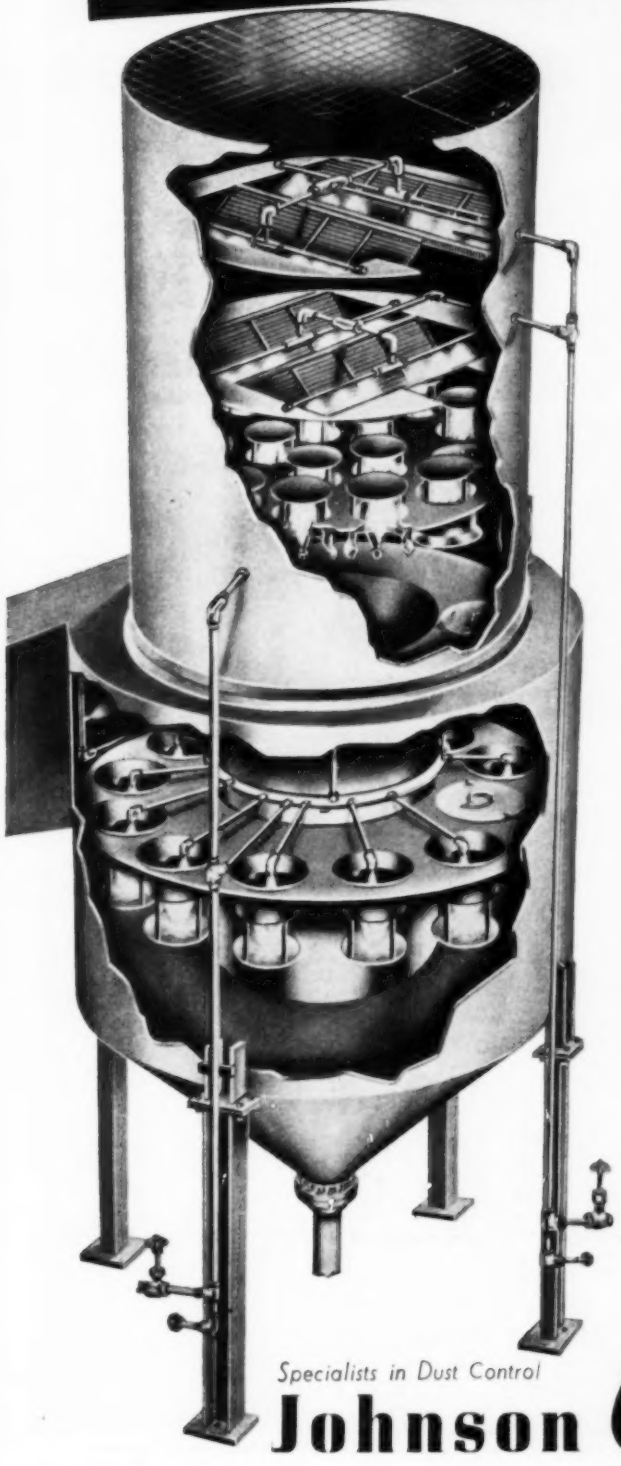
In fact, all over the project, veteran construction workers find that Internationals provide the muscle behind each engineering feat that keeps these far-flung operations going ahead like clockwork.

The big red machines with the IH trademark are known for good work. When you have a job to be done, get the facts on International Power from your International Industrial Distributor.

**INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILL.**

**INTERNATIONAL** INTERNATIONAL HARVESTER **POWER THAT PAYS**

# stop air pollution



## with an "LP"

## "MULTIPLE-ACTION" SCRUBBER*

• Six different principles incorporated into a single unit make the Johnson-March "LP" Multiple-Action Scrubber the most efficient yet developed for removing dust from stack discharged gases. "LP" Scrubbers are particularly adapted to the control of dust in asphalt plants, limestone plants and wherever stack dust is a problem.

The Johnson-March "LP" Scrubber employs many unique features not found in any other equipment which insure final removal of the low and sub-micron dust particles.

***Look at these Advantages...***

- **Completely portable . . . easily assembled and relocated**
- **Low back pressure—use with your present fan equipment**
- **Uses less water. Water can be recirculated**
- **Durable, heavy steel plate construction**
- **Low maintenance**
- **Extremely high efficiency dust recovery**

Send Now for this Free Illustrated Brochure. Clip and mail the attached coupon Today.

*Pats. Pending

THE JOHNSON-MARCH CORP. PQ-7
1724 Chestnut St., Philadelphia 3, Pa.

Without obligation, I'd like to know more about the use of the Johnson-March "LP" Scrubber in my plant. Please send me the FREE BROCHURE.

NAME .....
COMPANY .....
ADDRESS .....
CITY ..... STATE .....

*Specialists in Dust Control*

**Johnson March**

**1724 CHESTNUT STREET**
**PHILADELPHIA 3, PA.**

# MATERIALS HANDLING!

There's a Continental Conveyor for every industry.

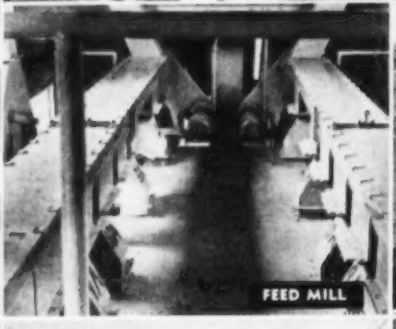
When you have a conveying or elevating problem — — specify **Continental**

STEAM GENERATING PLANT

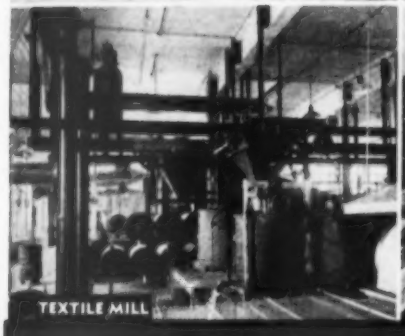
FERTILIZER PLANT

COTTONSEED OIL MILL

GRAIN HANDLING


FEED MILL

COAL MINE


TEXTILE MILL

CEMENT PLANT

QUARRY

BELT CONVEYORS, SCREW CONVEYORS, APRON CONVEYORS, BUCKET ELEVATORS
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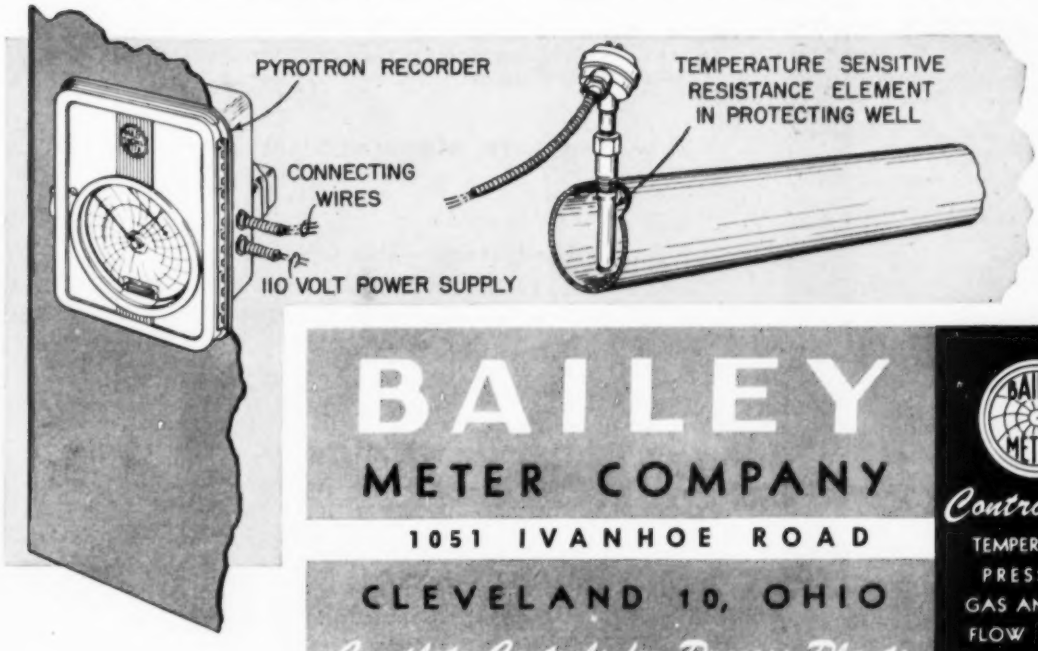


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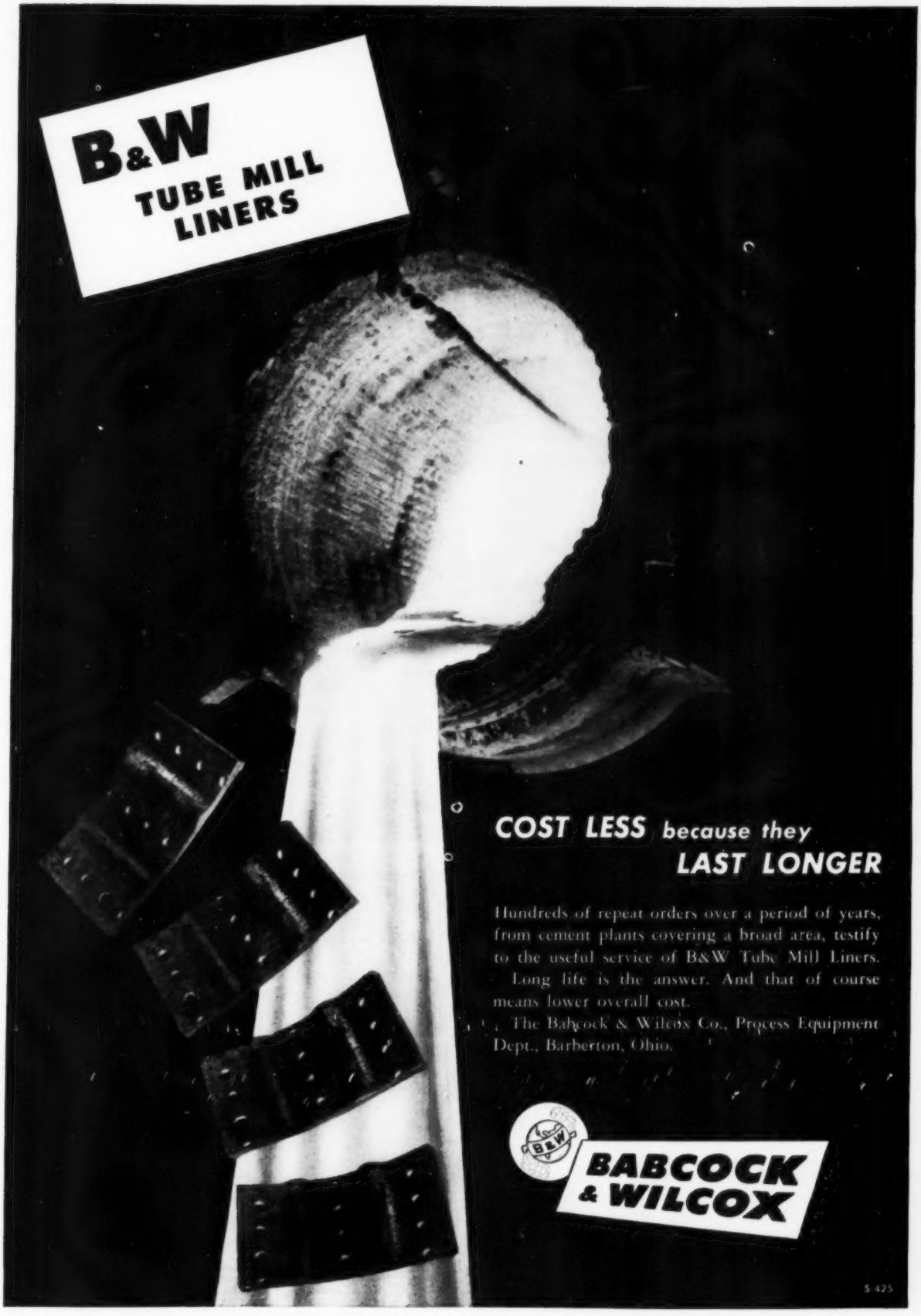
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# editorial

## *Taft-Hartley Law in Danger!*

THERE is a growing conviction in informed circles that the Taft-Hartley Act is in serious danger of being repealed or so weakened as to achieve the same result. It is reported that all-out efforts are being made behind the scenes to convince President Eisenhower, congressional leaders, and others that this act is unfair to organized labor in its present form. Ample evidence is available that these efforts are achieving the desired results and will succeed if prompt counter action is not taken.

The real danger to the Taft-Hartley Act lies in the fact that efforts to repeal or emasculate it are being carried on in such a way that the general public is not aware of the danger. According to unbiased observers in Washington, the President is determined to deal fairly with all groups in society; but his background, while it gives him an excellent insight on many of our other important problems, has given him little knowledge or experience in the labor relations policy field. In this field he must, as a result, depend heavily on advisers; and it is said that he is being strongly influenced by a group committed to the belief that in order to survive politically the G.O.P. must "buy" the support of big union leaders by yielding to their demands. That history does not substantiate this belief seems to have no bearing on the matter.

THE Taft-Hartley Act in 1947 was a direct result of public indignation against the growing influence of big union bosses over the Truman Administration and the flagrant abuses of power by those union bosses. The basic principle of this act is that no group in society should be above the law or be permitted to disregard the rights of individual workers and employees or the public interest in pursuit of its own ends. To that end the act severely restricted the closed shop, prohibited secondary boycotts, imposed responsibilities on unions commensurate with their privileges and power, safeguarded welfare funds, and established procedures for dealing with national emergency strikes. In the six years it has been in effect it has worked well and fairly; and it has not destroyed the unions, as union leaders so bitterly insisted that it would. The general indignation that the law was not invoked during the long steel strike of 1952 is proof that the public thinks it is a good law and is in favor of its retention and use.

In an article "How to Save Taft-Hartley" in the September 21, 1953, issue of *The Freeman,* Joseph H. Ball, former senator from Minnesota and an authority on labor relations and labor legislation, pointed out in detail the danger to the act and what must be done to save it. Among other things, he presented a chronological sequence of events in the development of labor policy under the present administration. In September, 1952, President Eisenhower, speaking to the AFL convention, emphatically opposed repeal of the Taft-Hartley Act and favored only minor amendments. In December, 1952, he announced the appointment of Martin P. Durkin, then president of an AFL union, as Secretary of Labor. From that time on there was one indication after another that Taft-Hartley was under fire. This culminated on July 31, 1953, in the "proposed Eisenhower message" to Congress, which suggested 19 amendments including 24 concessions to union demands, and left out all of the industry proposals which were opposed by Mr. Durkin.

PROTESTS by Vice President Nixon and others stopped this message, but somehow a copy of it was published in full in the *Wall Street Journal* of August 3. It is firmly believed by Mr. Ball and many others that this message was intended as a "trial balloon" and that the relative volume of protests as against endorsements of the proposed message will probably determine the Administration's future course of action. The changes proposed would have cut the heart out of the restrictions on compulsory union membership, the prohibition of secondary boycotts, and the safeguards on union welfare funds—three of the vital provisions of the act. Even the recent resignation of Mr. Durkin from his position as Secretary of Labor is not thought to have much significance. The danger to Taft-Hartley is not over, and it probably never will be.

Industry and the public have no real protection against ambitious union leaders except the Taft-Hartley Act, and they must act quickly and forcefully to counteract a serious threat to its existence. The public reaction to the proposals in the President's "message" will probably determine whether it is to be abandoned or whether it is the beginning to additional concessions to union power. Enemies of the act are attempting to minimize the importance of the message to the public while continuing to further its aims.

THERE is only one way to stop them, according to Mr. Ball, and that is for the public to make its desires known at once. If enough people refuse to be fooled and protest vigorously against these changes in the act they can get results, as was the case with Taft-Hartley in 1947 and the steel strike in 1952. The President and many of his advisors want to be fair to all groups; but unless they hear from the people, they may be persuaded to follow the union leaders' wishes. Those wanting to make their opinions count are urged to write or wire the President, the vice-president, the members of the cabinet, their representative, or their senator. Each message will count; and it looks now as if only a flood of such messages can keep Taft-Hartley from being amended into a more one-sided and biased statute than was the old Wagner Act.

*Walter E. Trauffer*

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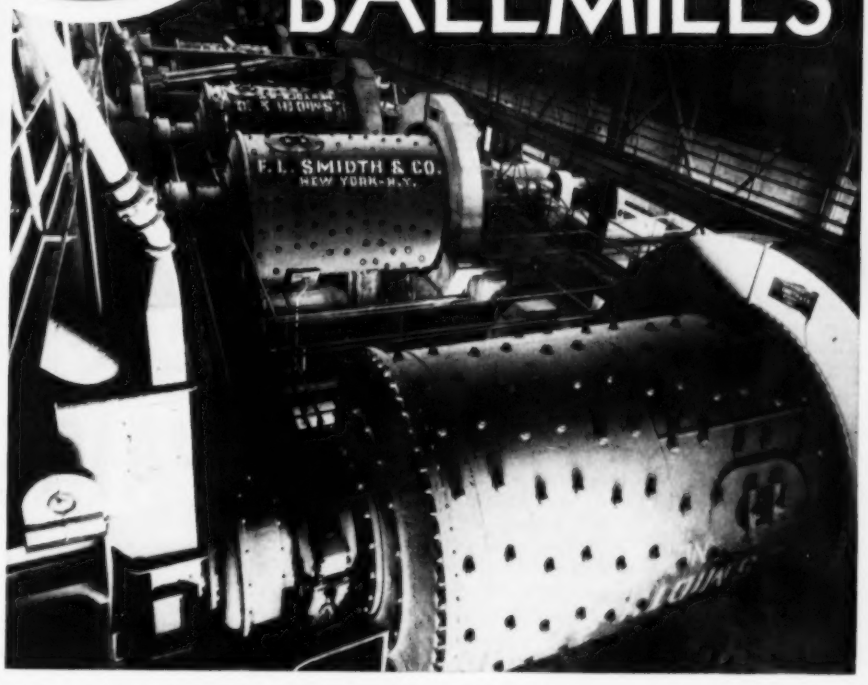


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Mr. Jones reports that this Cat* D17000 uses only 35 gallons of low-cost No. 2 furnace oil per 8-hour day—a saving of one-third over former power! It can deliver a full 200 HP, and idle without fouling, on this money-saving fuel. Where the previous unit was temperamental and ran hot, there's no need to tinker with this reliable engine.

A second Cat Engine, a D7700, powers the primary crusher at the plant. Other Caterpillar equipment on the job includes 10 track-type tractors and five rubber-tired W10 Wagons. Mr. Jones speaks from experience when he comments on the rugged simplicity of Caterpillar units: "We can easily overhaul a Cat Engine and get it back to the same power it had. Other make engines we've had were nothing but grief and expense."

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# news of the industry

PIT AND QUARRY

## St. Lawrence Cement Co. Building $11,000,000 Plant At Villeneuve, Quebec

A new Canadian cement company has been formed, with a proposed output of 6,000,000 bags of cement per year. Proposed production date is September, 1954, when the new $11,000,000 plant of the St. Lawrence Cement Company will go into operation.

The plant, to be built at Villeneuve, a suburb of Quebec City, is now being set up by a 30-man staff of technicians. Most of this staff are from the technical center of Holderbank, a group of Swiss financiers with interests in 19 cement companies throughout the world. The plant will eventually employ about 250 workers. Although backed by the Swiss group, the company is a Canadian venture.

General manager of the new company is Dr. Bernard Ulrich, who stated recently that although no sales organization has been set up, there have been several inquiries from cement-short Canadian manufacturers in the eastern part of the country. "Already a part of our production is tagged for definite buyers," he added.

The company was formed as a result of submission of a cement industry project to the Swiss group by Armand Viau, Quebec industrial commissioner. Tests near Villeneuve indicated "cement land" of the first order—good enough, according to Dr. Ulrich, for production at full capacity for at least 100 years. Fire tests have shown high-grade raw materials at Villeneuve.

Most of the plant machinery, delivery of which is expected in mid-1954, will come from Canadian Allis-Chalmers, Lachine, Que. The rotary kiln to be used in the plant is reported to be one of the largest ever designed. The factory will be kept 99 percent dust-free by the use of electrostatic filters, and a 400-ft. chimney will eliminate smog.

## $1,500,000 Plant Scheduled At Wausau, Wis., by 3M

Officials of the Minnesota Mining and Manufacturing Company have announced plans for a $1,500,000 expansion of its roofing granule manufacturing facilities at Wausau, Wis. The project called for the installation of crushing equipment at the quarry north of Wausau and for the modernization and expansion of its granule coloring plant within the city.

G. W. Swenson, vice-president in charge of the roofing granule division, said the new facilities would increase granule production of the Wausau plant by one-third. The plant already is the largest of the three now operated by the granule division.

The company also operates quarries and roofing granule plants at Little Rock, Ark., and Corona, Calif., and has applied for permission to establish another plant in Somerset County, New Jersey.

• A view of the St. Lawrence Cement Company's plant at Villeneuve, near Quebec City, now under construction. These facilities, scheduled to go into production in 1954, will have a capacity of 6,000,000 bags of cement annually.

## Mississippi Island Leased For Future Shiely Operation

Anticipating that their deposits at the St. Paul, Minn., plant would soon be depleted, the owners of the J. L. Shiely Company have leased 1,800 acres on Grey Cloud Island in the Mississippi River.

Plans are being worked out for a new plant on the island, from which materials will be carried by barge and towboat to distribution terminals on the Mississippi and Minnesota rivers. First job will be dredging a channel 4,500 ft. long. The new facilities will have a capacity of 600 t.p.h. of several sizes of sand and gravel.

## Coming Events

*February 7-10, 1954—Washington, D. C.* 34th Annual convention, National Concrete Masonry Association. Shoreham Hotel.

*February 15-19, 1954—Chicago.* 38th annual convention, National Sand and Gravel Association and 24th annual convention, National Ready Mixed Concrete Association, with machinery expositions. Conrad Hilton Hotel.

*February 19-20, 1954—Chicago.* Annual Convention, National Agricultural Limestone Institute, Inc. Blackstone Hotel.

*February 22-24, 1954—Chicago.* 37th annual convention National Crushed Stone Association, with exposition. Conrad Hilton Hotel.

*February 22-25, 1954—Denver.* Annual convention, American Concrete Institute. Shirley-Savoy Hotel.

*February 24, 1954—San Francisco.* 4th annual convention and meeting, American Concrete Agricultural Pipe Association. Fairmont Hotel.

*February 25-27, 1954—San Francisco.* 46th annual convention, American Concrete Pipe Association. Fairmont Hotel.

## August Building Volume Dips Slightly from July—8-Month Total Is High

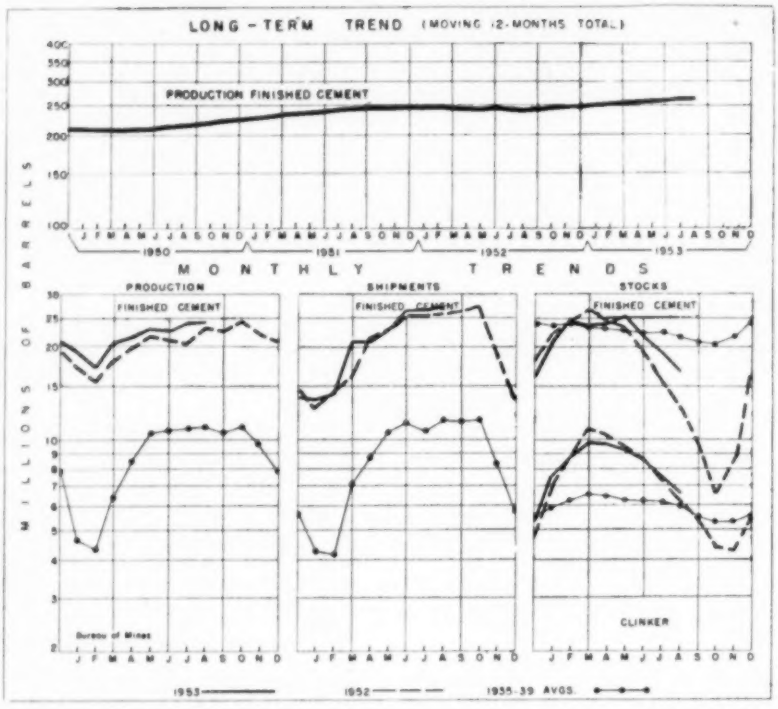
Construction contract awards set forth in Dodge Reports for August in the 37 eastern states continued strong after July's top record for the year thus far. A month ago Dodge said that if the monthly total for the last five months could average $1,414,751,000, the year's total would tie record-breaking 1952. The August total was $1,414,408,000, an infinitesimal percentage under that average.

But the August volume was 21 percent less than the July figure, although only 2 percent less than for August, 1952. The eight-month total is now $11,115,588,000, up 4 percent over the first eight months of 1952. Last month it was 5 percent at the seven-month stage.

F. W. Dodge Corporation, construction news and marketing specialists who issue Dodge Reports, pointed out that while the August figures seem low in comparison with the swollen July totals, it is significant that they held their own against the averages. A mid-year decline had been expected and seemed to have started in June until July went sharply up.

By classifications the August totals were as follows: nonresidential, $545,851,000, down 29 percent from July but up 5 percent over August, 1952; residential, $507,560,000, down 22 percent from July and down 19 percent from August, 1952; heavy engineering (public works and utilities), $360,997,000, down 4 percent from July but up 24 percent over August, 1952.

Individual eight-month 1953 totals compared with the eight months in 1952 were as follows: nonresidential, $4,262,275,000, up 13 percent; residential, $4,419,463,000, down 4 percent; heavy engineering, $2,433,850,000, up 4 percent.




SUMMARY—Production of finished portland cement in August, 1953, totaled 24,289,000 barrels, as reported to the U.S. Bureau of Mines—3 percent more than in August, 1952. Mill shipments totaled 27,092,000 barrels—a 5 percent increase from the August, 1952, figure—while stocks of 16,401,000 barrels of finished portland cement at the end of the month were 28 percent higher than on the same date a year ago. Clinker production during the month totaled 23,370,000 barrels—an increase of 5 percent from the August, 1952, total.

PRODUCTION—One hundred fifty-six (156) plants located in 37 states and Puerto Rico reported a production of 24,289,000 barrels of finished portland cement during the month, compared to 155 plants which manufactured 23,573,000 barrels in August, 1952. Clinker production during the month was 23,370,000 barrels, as compared to 22,233,000 barrels during the previous August.

SHIPMENTS—Mill shipments of finished portland cement were 5 percent higher than in August, 1952, and totaled 27,092,000 barrels. Shipments were higher in 11 districts and lower in 9 districts, as compared to shipments in August, 1952. Several districts reported gains ranging from 12 percent to 18 percent. Declines of 19 percent and 12 percent were noted in the Alabama and western Pennsylvania-West Virginia districts, respectively. Shipments were 9 percent lower in Texas, while in the California districts they varied only slightly from those of August, 1952.

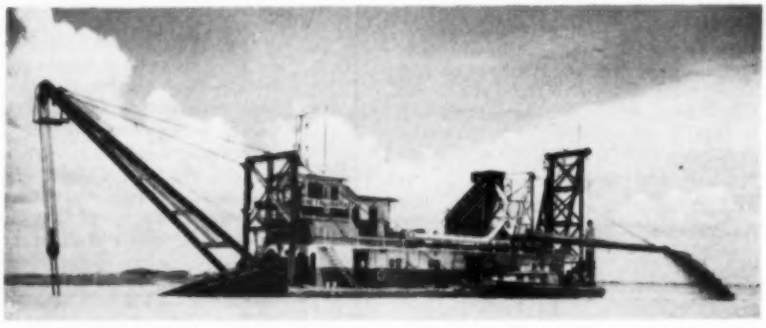
STOCKS—Mill stocks of 16,401,000 barrels of finished portland cement were on hand on August 31, 1953—28 percent more than at the end of August, 1952—while stocks of clinker totaled 6,613,000 barrels—6 percent more than at the end of August, 1952.

## Kaiser Operations at Fallon Producing High-Grade Spar

At Fallon, Nev., the Kaiser Aluminum & Chemical Corporation is milling 100 tons of fluorspar ore daily and producing 30 to 50 tons of high-grade fluorspar concentrates. This product is shipped to a refinery at Nichols, Calif. The company requires approximately 31,000 tons of acid grade fluorspar annually to produce by-products essential for its primary aluminum plants at Spokane and Tacoma, Wash., and New Orleans, La.

Mill equipment includes grinding and flotation units. The plant is located on the Carson River, about a mile west of Fallon and along a branch line of the Southern Pacific railroad. Fluorspar ore is trucked to the plant from the Baxter mine in the Broken Hills district, about 70 miles southeast of Fallon. H. S. Fowler is general superintendent of the operation, and Jay Shoemaker is mill superintendent.

Purchased two years ago by Kaiser from H. W. Gould & Co. of San Francisco, the Baxter mine reportedly is one of the nation's largest commercial grade fluorspar deposits. Mining is proceeding to an approximate depth of 400 ft., and a survey made in 1950 by U. S. Bureau of Mines, based on diamond drilling, showed the high-grade ore body persisted to a depth of at least 500 ft. Vet Baxter, who discovered the deposit in 1922 and sold it to the Gould interests in 1951, estimated at time of the sale that the property contained more than 400,000 tons of shipping and concentrating grade ore. Reserves have been increased by a development program conducted by Kaiser.



● At Corpus Christi, Tex., this big dredge, the "Erle P. Halliburton", scoops up 500 cu. yd. of shell per hour from Gulf waters for the Halliburton Portland Cement Company's plant. Power is provided by a Caterpillar D386 diesel-electric set. The dredge is owned by the General Dredging Corporation.

## Circular-Type Screen Solves Sizing Problem For Bristol Silica Co.

The Bristol Silica Company of Rogue River, Oreg., is one of the pioneer producers of industrial sands in the Pacific northwest. For years the plant flow-sheet has included conventional crushing, grinding, and screening equipment to make its finished products.

Recently, when extremely accurate-sized ground quartz in the medium-fine and fine size ranges was demanded, the existing equipment seemed unable to make the required sharply-defined separations of minus 50-mesh material. So the concern bought a Sweco 48-in. 4-deck separator to solve the problem. The circular-type vibrating screen was installed and ready to operate without delay, being set up on a timber floor of the plant without any special foundation, since there is no transmitted vibration.

● The recently-installed circular type screen which separates minus 50-mesh material.

Plant capacity is now 300 tons of crushed and ground silica, the quartz raw material being quarried several miles away and trucked to the plant, which is served by rail for its outgoing shipments. Besides the ground quartz, the plant also turns out 30 to 50 tons of granite poultry grits daily. Fayette I. Bristol is the owner and general manager.

## Sale of Loomis Talc Corp. To International Talc Pending

Purchase of the W. H. Loomis Talc Corporation at Gouverneur, N. Y., by the International Talc Company is "just a matter of time," according to E. D. Magnus, Loomis president.

"We have agreed to sell and they have agreed to buy," declared Mr. Magnus, adding that certain details were still to be worked out and that the transfer had not been consummated.

Mr. Magnus is an executive of the Eastern Magnesia Talc Company, which, under a voting trust agreement effected in 1946, holds a majority interest in Loomis.

International Talc also has substantial holdings in the Gouverneur area, where Frederick G. Kuehl is manager. Emil E. Esckilsen is resident general manager of Loomis.

An agreement was reached recently between officials of the two companies to open up International's Wight mine and grind the ore in Loomis mills. This arrangement, similar to an agreement reached in 1948, when one of International's mills burned down, provides for ore to be shipped to customers of both companies.

● Office and crushing plant of the Bristol Silica Company, Rogue River, Oreg.

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*The Davison Sentinel*, safety magazine for employees of the Davison Chemical Corporation, Baltimore, Md., recently was given an award of merit by the Baltimore Safety Council in recognition of "exceptional service in the promotion of safety". It was the second such annual award won by the publication.

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## *Cover Picture....*

● A striking waterfront view of the British Columbia Cement Company's operation at Bamberton, B. C., is shown on our cover this month. These facilities recently underwent a modernization program which upped output from 750 000 bbl. to 2,200,000 bbl. annually. It required eight years to complete the streamlining of the 40-year-old plant, which supplies all of the province of British Columbia with portland cement. For a full description of operations at Bamberton, see page 84 of this issue.

## American Cement Industry Reflects Business Boom

Several of the major cement producing concerns have reported sales and earnings which indicate a rising trend. Permanente Cement Company officials reported consolidated net earnings for the six months ended July 31, 1953, totaling $2,272,157, equivalent to $1.62 per share, compared with $1,640,899, or $1.17 per share for the corresponding period of 1952. Consolidated net sales and operating revenue reached $17,774,000 for the half-year. This volume was 7 percent higher than for the previous six months and substantially above the $12,724,000 for the comparable 1952 period before Permanente's purchase of Kaiser Gypsum Company.

A substantial gain in sales and net income for the first six months of this year was reported for the Marquette Cement Manufacturing Company. Net income stood at $2,070,423 on sales of $13,758,320. This compares with a net income of $1,821,188 on sales of $12,941,312 for the corresponding six months in 1952.

Earnings (net income) of the Dragon Cement Company, Inc., for the 12 months ended June 30, 1953, were $1,073,581, compared with $716,738 in the comparable period last year. Net sales this year amounted to $9,473,744, against $9,138,322 last year.

Alpha Portland Cement spokesmen, reporting for the 12 months ended June 30, 1953, stated that the net sales totaled $25,145,604, compared with $24,329,341 for the previous year. Net income in 1953 stood at $2,664,473; the 1953 figure was $2,200,654.

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According to the May, 1953, issue of *Mineral Trade Notes*, a publication of the U. S. Bureau of Mines, output of cement in the Netherlands in 1951 amounted to 702,300 metric tons. (Source of this information was the Netherlands Ministry for Economic Affairs.) No data was available on 1950 production; however, exports of all types of cement rose from 13,163 metric tons, valued at approximately $176,473, in 1950 to 26,034 metric tons, valued at approximately $374,775, in 1951.

# Natl. Lime Assn. Announces 1952 Safety Contest Winners

SEVENTEEN certificate awards for injury-free operations have been made in the National Lime Association Safety Competition of 1952, conducted by the U. S. Bureau of Mines. This is the largest number of awards since the competition was started in 1935 and was a fitting climax to a contest among 52 operations, which combined, had lower injury frequency and severity rates than in any one of the 18 years of the contest. A Certificate of Honor is awarded by the National Lime Association to each competing lime plant that was operated throughout 1952 without a lost-time injury. The winners of awards are as follows:

*Quarries with Calcining Plants Working 100,000 or More Man-hours* — Plymouth Meeting plant, Plymouth Meeting, Pa., operated by G. & W. H. Corson, Incorporated, for 351,520 man-hours.

Gibsonburg plant, Gibsonburg, Ohio, operated by The Kelley Island Lime and Transport Company for 275,255 man-hours.

Luckey plant, Luckey, Ohio, operated by the National Gypsum Company for 186,472 man-hours.

Ohio plant, Millersville, Ohio, operated by The J. E. Baker Company for 148,232 man-hours.

Asbury (Knoxville) plant, Knoxville, Tenn., operated by The Standard Lime and Stone Company for 109,824 man-hours.

*Quarries with Calcining Plants Working Less than 100,000 man-hours* — Thomasville plant, Thomasville, Pa., operated by The J. E. Baker Company for 70,952 man-hours.

Nelson plant, Nelson, Ariz., operated by the Grand Canyon Lime and Cement Company for 55,960 man-hours.

Manitowoc plant, Manitowoc, Wis., operated by the Rockwell Lime Company for 45,131 man-hours.

Milltown plant, Milltown, Ind., operated by the Louisville Cement Company for 39,851 man-hours.

Frederick plant, Frederick, Md., operated by the Shank and Etzler Lime Company for 19,000 man-hours.

*Underground Mines with Calcining Plants* — Kimballton plant, Kimballton, Va., operated by the National Gypsum Company for 367,553 man-hours.

Bakerton plant, Bakerton, W. Va., operated by The Standard Lime and Stone Company for 278,698 man-hours.

Hannibal plant, Hannibal, Mo., operated by the Marblehead Lime Company for 93,404 man-hours.

Marblehead plant, Marblehead, Ill., operated by the Marblehead Lime Company for 48,596 man-hours.

*Calcining Plants Only* — Ludington plant, Ludington, Mich., operated by The Dow Chemical Company, Ludington Division, for 128,075 man-hours.

Springfield plant, Springfield, Mo., operated by the Ash Grove Lime and Portland Cement Company for 72,947 man-hours.

Duluth plant, Duluth, Minn., operated by the Cutler Magner Company for 69,361 man-hours.

The total injury-free man-hours of exposure at the 17 winning plants was 2,360,831, or 20 percent of the total hours worked at the 52 plants entered in the competition. This achievement indicates clearly the results that can be obtained by the combined efforts of employees and supervisors in the prevention of accidents.

*Injury Experience at Competing Plants* —The injury experience at all plants enrolled in 1952 was the best in the 18-year history of the contest. The frequency rate of 15.179 injuries per 1,000,000 hours of worktime was 33 percent less than the 22.776 rate in 1951 and almost 50 percent lower than the 18-year average rate of 29.448. The severity rate of 1.273 days per 1,000 man-hours was 59 percent lower than the previous year's rate of 3.091 and 65 percent less than the average rate of 3.608. It is notable that 35 (67 percent) of all competing plants had frequency rates better than the average and that 43 (83 percent) had severity rates lower than the average.

The 1952 competition also recorded the greatest number of man-hours — 12,056,121 — and during this record worktime, there were 1 fatal, 3 permanent partial, and 179 temporary total injuries; a total of 183 lost-time injuries. The total loss in time resulting from these injuries was 15,344 days—the fourth-lowest time loss since the start of the competition in 1935.

Of the four groups into which the competing plants are classified, the frequency and severity rates were lowest at the 8 underground mines having calcining plants, Group B. However, the frequency rate was highest at the 12 quarries with calcining plants that were operated less than 100,000 man-hours, Group A2; and the severity rate was highest at the 24 similar operations that were worked 100,000 or more man-hours, Group A1.

Of the 52 plants competing last year, 42 participated in the 1951 competition. Comparison of the injury experience at these plants in both years shows that the frequency and severity rates were improved. The injury experience at 9 identical lime plants enrolled in the competition since 1935 showed sharp improvements in both injury-frequency and injury-severity rates over the 9-plant record of 1951; and both rates were the lowest recorded in any one year of the 18-year history of the contest.

*Causes of Injuries*—Accidents resulting from burns accounted for the largest number of injuries during the 1952 competition. They caused 30 injuries (18.5 percent) of all accidents with stated causes. There were 26 injuries charged to handling materials, other than rock, and 19 temporary total and 1 fatal injury caused from falls of persons. The three next most severe causes of injuries resulted from falling objects, haulage, and machinery, with 16, 15, and 15 injuries, respectively. Thus, 122 (75 percent) of all injuries with known causes were recorded under these six categories.

The most severe injuries resulted from falls of persons. Injuries from this source had an average severity of 328.5 days each. This high average was due to the one fatality charged against the 52 participating plants. Of the temporary injuries, the most severe was a drilling accident, and the least severe were those resulting from hand tools.

*Eligibility* — The safety competition is

• New president of the Mine Inspectors' Institute of America is George H. Deike (left), board chairman of Mine Safety Appliances Company, Pittsburgh. He succeeds John M. Malloy (center), Oklahoma City, chief of the Oklahoma Department of Mines. Joining in the congratulations is Joseph Bierer, Charleston, W. Va., chief of the West Virginia Department of Mines. Mr. Deike was elected at the 43rd annual convention of the Mine Inspectors' Institute of America held recently in Birmingham, Ala.

sponsored by the National Lime Association and conducted by the Bureau of Mines. Any plant producing quick or hydrated lime or dead-burned dolomite, all or a portion of which is sold commercially, is eligible. A plant may be enrolled on applications obtained from the Accident Analysis Branch, Washington 25, D. C., or from the following regional offices of the Bureau: Region II, Albany, Oreg.; Region III, San Francisco, Calif.; Region IV, Denver, Colo.; Region V, Minneapolis, Minn.; Region VI, Amarillo, Tex.; Region VII, Knoxville, Tenn.; and Region VIII, Pittsburgh, Pa.

### Sixteen New Cement Plants Planned for Turkey

In line with its vast industrial growth in recent years, Turkey is expanding its cement producing facilities. Plans are being formulated for private capital to finance the construction of 16 new cement plants in different parts of that country. This development will help meet the enormous increase in cement demand brought on in the last few years due to intensified work on new homes, ports and harbors, roads and bridges, airports, and hydro-electric and irrigation projects.

In 1950 Turkey's five plants had produced 400,000 tons of cement against an over-all consumption of 535,000 tons. This year's production from six plants is expected to reach the 1,000,000-ton mark, but estimated consumption will be close to 1,600,000 tons. The 16 new cement plants will have an aggregate capacity of 1,750,000 tons, which should offset the present deficit balance and also take care of increased demand in the foreseeable future, thus saving a considerable amount in foreign exchange, which must be allocated for cement imports.

# Diesel Pumps Do a Job In Sand Mining Operation

An extensive strip of sand near Junction City, Ga., which displaces the red clay soil formation common to most of the state, has kept the Taylor Sand Co. working at top speed for eight years.

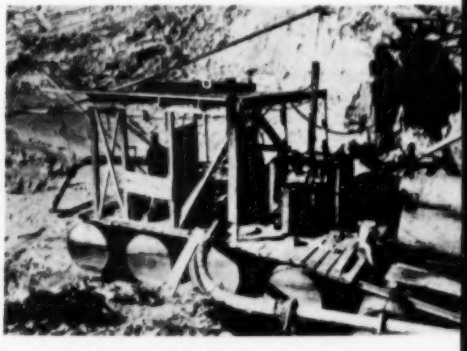
The company removes the sand hydraulically, utilizing a series of diesel-powered pumps to shoot water under high pressure against the walls of the pit and also to circulate the water and dislodged sand towards the loading dock. The water ultimately finds its way back to the lake from which it is pumped. The sand is mined, washed, graded, and loaded into railroad cars at the rate of 200 t.p.h. Only ten men are required for the entire operation.

Water is first pumped from the lake by an 8 by 10 Gardner-Denver pump and forced a distance of a quarter of a mile to the pit. Here a 6-in. pump sucks up the sand and water and delivers it to the separators 900 ft. away. The sand drops into bins and is hosed to a point where another pump forces it up to a final washer, from which it drops into cars.

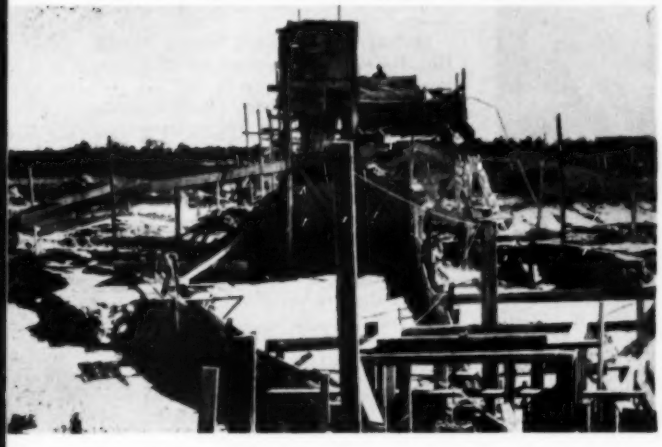
This plant operates ordinarily on an eight-hour day, but frequently when bad weather has interfered, the operation extends practically around the clock. The three pumps used by the company are powered by General Motors two-cycle diesel engines engineered to the job by the Blalock Machinery & Equipment Company of Atlanta. The plant is owned and operated by Steve E. Taylor.

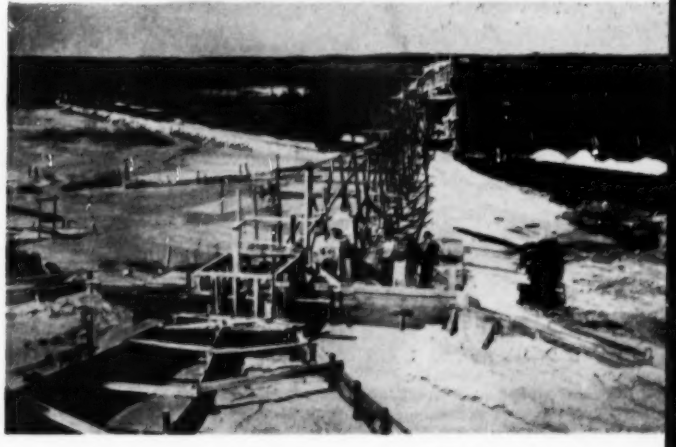
Above: At the pit water at high pressure dislodges sand from the banks and floats it to a second pump.

Below: At this point sand and water washed down from the hydraulic operation is picked up by a 6-in. pump powered by a diesel engine and forced 900 ft. to a separator. The upper pipe carries the water supply from the lake to the hydraulic monitor.



The graded sand in bins, ready to be hosed and pumped 200 ft. to a final washer and thence to waiting railroad cars. The final pumping operation is accomplished by a 6-in. diesel-driven sand pump.





# N.S.G.A. Announces Awards In 1952 Safety Competition

THE Eliot No. 104 plant of Pacific Coast Aggregates, Inc., at Pleasanton, Calif., the West Des Moines plant of the Concrete Materials Company at West Des Moines, Iowa, and the Bennett plant of the Thomas Gravel Company at Birdville, Tex., won top safety honors in the 24th National Sand and Gravel Association Safety Competition, conducted by the U. S. Bureau of Mines for N.S.G.A. members only. These operations were awarded the trophies provided by *Rock Products* magazine for having achieved the best safety records in the three groups of sand-and-gravel plants in the competition. In addition to the trophy awards, the association awarded a Certificate of Achievement in Safety to each winning plant and a Certificate of Accomplishment in Safety to each production employee at these plants in recognition for the part he played in attaining the outstanding safety performance at his plant. The association also presented a Certificate of Achievement in Safety to each of the 40 plants at which there were no disabling injuries during a total worktime of 20,000 or more man-hours. (This competition is not to be confused with the U. S. Bureau of Mines safety contest which is open to *any* sand-and-gravel operation.)

*Plants operating more than 100,000 man-hours*—The Eliot No. 104 plant, a wet-pit operation of the Pacific Coast Aggregates, Inc., had the best safety record in this group. It was injury-free during a total operation of 161,644 man-hours during 1952. The trophy award for this safety achievement was the first such award to this plant, which has been enrolled in the competition since 1947. During the six years it has been a participant, the plant has been operated a total of 865,185 man-hours without a fatality, a permanent total, or a partial permanent injury; all 28 lost-time injuries recorded during this period have been of a temporary nature, and these have occurred at a frequency rate of 43.363 per 1,000,000 and at a severity rate of 0.643 per 1,000 man-hours, respectively. Since entering the contest in 1947, the frequency at which injuries occurred at this plant has decreased sharply. In 1947 the frequency rate was 80.340 and the severity rate 1.346. In the competition for the trophy in this group, two other sand-and-gravel plants also achieved perfect safety records for the year. However, they were ranked second and third in the group as their exposure-time was less than that of the Eliot No. 104 plant.

*Plants operating 50,001 to 100,000 man-hours*—Top safety honors in this group were awarded to the West Des Moines dredge operation of the Concrete Materials Company at West Des Moines, Iowa, for its injury-free record in 1952 during a total worktime of 98,340 man-hours. The trophy award in 1952 was the first to this plant, which has been a contender in the contest since 1948. During its five years of enrollment, there have been seven temporary disabling injuries reported by this plant during a total time of hazard exposure of 421,871 man-hours. These injuries occurred at a frequency rate of 16.593 and a severity rate of 0.405. In this group there were 12 other sand-and-gravel operations that were worked throughout the year without any disabling injuries. However the West Des Moines plant was operated the greatest number of man-hours without any lost-time injury and thus was declared the winner.

*Plants operating up to 50,000 man-hours*—The Bennett plant, a wet-pit operation, operated by the Thomas Gravel Company at Birdville, Tex., won the *Rock Products* trophy in this group. The Bennett plant had a total worktime of 48,042 man-hours without a lost-time injury. Enrolled in the competition since 1947, this operation has been awarded the trophy for the second time, having won it before by an injury-free record in 1949 for working 43,928 injury-free man-hours. During its six years as a participant in the competition no injuries were reported in four of these years—1947, 1949, 1950, and 1952, and only two disabling injuries occurred during the six-year period. The rate of frequency has been 7.373 injuries per 1,000,000 and the rate of severity 0.177 day per 1,000 man-hours. A total of 35 sand-and-gravel plants in this group had perfect safety records during the year. However, the Bennett plant, having worked the most man-hours without any lost-time injuries, was declared the winner.

*Injury-free plants*—Employees and supervisors at 51 of the 125 competing sand-and-gravel operations in the 1952 competition achieved the outstanding safety records of operating throughout the year without any lost-time injuries. Men at these 51 plants, of which three were trophy winners, worked 2,221,860 man-hours or 24.4 percent of the 9,103,573 man-hours worked at all the enrolled plants.

The following plants, excluding the three trophy winners, were operated 20,000 or more man-hours injury-free during 1952 and for this outstanding achievement were awarded Certificates of Achievement in Safety by the National Sand and Gravel Association. In addition to these 37 plants, 11 other operations worked the full year without a lost-time injury, but due to the minimum requirement of 20,000 or more man-hours of work, were not eligible for a Certificate. It is noted that these plants have competed year after year with full knowledge of their ineligibility for award. Their efforts and enthusiasm to reduce accidents in the sand-and-gravel industry are highly commendable.

Dredge "Franklin" plant, Warner Co., Tullytown, Pa., operated 110,279 man-hours.

Quigley wet-pit plant, Gravel Mining Co., Hurst, Tex., operated 108,883 man-hours.

Crystal Lake dry-bank plant, Consumers Co., Crystal Lake, Ill., operated 88,347 man-hours.

Centerville No. 106 dry-pit plant, Pacific Coast Aggregates, Inc., Centerville, Calif., operated 87,223 man-hours.

Elgin dry-bank plant, The Chicago Gravel Co., Elgin, Ill., operated 83,109 man-hours.

Farr dry-wet pit plant, Gifford-Hill & Co., Inc., Texarkana, Tex., operated 81,239 man-hours.

Alleyton wet-pit plant, Texas Construction Material Co., Alleyton, Tex., operated 63,610 man-hours.

● Modern materials handling equipment aids greatly in maintaining production at capacity level for the Kern Rock Company's plant at Bakersfield, Calif. Mobility of the Allis-Chalmers HD20G torque converter tractor with a 4-cu. yd. front-end shovel provides fast movement from stockpile to batch plant hopper, keeping the plant operating without delay. One man on this unit provides a lot of material in a day; and he still has time to do other jobs, such as loading trucks from various stockpiles.

Snelling dry-pit plant, J. L. Shiely Co., St. Paul, Minn., operated 63,304 man-hours.

Hollimon wet-pit plant, Texas Construction Material Co., Alleyton, Tex., operated 62,870 man-hours.

Jere dry-wet pit plant, Southwest Construction Materials Co., Irving, Tex., operated 62,167 man-hours.

No. 7A dredge plant, Lyman-Richey Sand & Gravel Corp., La Platte, Nebr., operated 55,367 man-hours.

Kingsbury wet-pit plant, Gravel Mining Co., Euless, Tex., operated 54,602 man-hours.

Fort Jefferson wet-pit plant, American Aggregates Corp., Fort Jefferson, Ohio, operated 53,768 man-hours.

No. 5 & 6 dredge plants, Lyman-Richey Sand & Gravel Corp., Plattsmouth, Nebr., operated 53,502 man-hours.

Portland dry-bank plant, Portland Sand & Gravel Co., Portland, Pa., operated 47,201 man-hours.

Northport dry-bank plant, Metropolitan Sand & Gravel Corp., Northport, N. Y., operated 44,672 man-hours.

Hawarden wet-pit plant, L. G. Everist, Inc., Hawarden, Iowa, operated 43,999 man-hours.

Rockfield No. 124 wet-pit plant, Pacific Coast Aggregates, Inc., Friant, Calif., operated 41,799 man-hours.

Kalamazoo dry-bank plant, American Corp., Kalamazoo, Mich., operated 41,232 man-hours.

Claremont No. 11 dry-pit plant, Consolidated Rock Products Co., Claremont, Calif., operated 40,499 man-hours.

Boonville No. 1 dry-bank plant, Eastern Rock Products, Inc., Boonville, N. Y., operated 36,453 man-hours.

No. 2A dredge plant, Lyman-Richey Sand & Gravel Corp., La Platte, Nebr., operated 36,208 man-hours.

Yardley wet-pit plant, Union Sand & Gravel Co., Spokane, Wash., operated 36,143 man-hours.

West Wyoming dry-bank plant, Airport Sand & Gravel Co., West Wyoming, Pa., operated 32,000 man-hours.

Lindsay No. 123 wet-pit plant, Pacific Coast Aggregates, Inc., Lindsay, Calif., operated 31,939 man-hours.

Fort Wright dry-pit plant, Union Sand & Gravel Co., Spokane, Wash., operated 30,448 man-hours.

Holley dry-bank plant, Gifford-Hill & Co., Inc., Allamoore, Tex., operated 29,879 man-hours.

Sierra No. 19 dry-pit plant, Consolidated Rock Products Co., Monrovia, Calif., operated 29,800 man-hours.

Fayetteville dry-pit plant, Cumberland Gravel & Sand Co., Fayetteville, N. C., operated 28,756 man-hours.

St. Louis dredge plant, Mississippi River Sand & Material Co., Independence, Mo., operated 28,112 man-hours.

"F" dry-bank plant, The Buffalo Slag Co., Inc., Franklinville, N. Y., operated 25,914 man-hours.

Ricks wet-pit plant, Texas Construction Material Co., Alleyton, Tex., operated 24,470 man-hours.

No. 15 dredge plant, Lyman-Richey Sand & Gravel Corp., Columbus, Nebr., operated 23,317 man-hours.

● Three members of the Ottawa Silica Company's personnel and the Illinois firm's Model 180 Cessna four-passenger plane (left to right): H. C. Thornton, vice-president and treasurer; James C. Lockwood; and Wayne B. Gyger, general superintendent of the company. The all-metal monoplane cruises in excess of 150 m.p.h. and is equipped for instrument flight. It will be used for sales activity, trouble shooting in the field, quick pickup of light equipment parts, and experimental and research work.

South Bend dry-pit plant, South Bend Sand & Gravel Corp., South Bend, Ind., operated 22,213 man-hours.

Olympia No. 125 dry-pit plant, Pacific Coast Aggregates, Inc., Felton, Calif., operated 20,536 man-hours.

Trenton No. 2 dry-pit plant, Eastern Rock Products, Inc., Barneveld, N. Y., operated 20,479 man-hours.

No. 23 dredge plant, Lyman-Richey Sand & Gravel Corp., Bridgeport, Nebr., operated 20,322 man-hours.

*Eligibility*—Enrollment of operations of the association members in the National Sand and Gravel Safety Competition, sponsored and conducted annually by the Bureau of Mines, automatically enrolls and entitles operations to compete in the N.S.G.A. Competition. Enrollment applications, rules, and information on the contests are available upon request from the Accident Analysis Branch, Health and Safety Division, Bureau of Mines, Washington 25, D. C., or from the following regional offices of the Bureau: Region II, Albany, Oreg.; Region III, San Francisco, Calif.; Region IV, Denver, Colo.; Region V, Minneapolis, Minn.; Region VI, Amarillo, Tex.; Region VII, Knoxville, Tenn.; and Region VIII, Pittsburgh, Pa.

● The singing child on this year's Christmas Seal is a symbol of hope and faith in the future, and a pledge to the present.

The HOPE is the eventual eradication of tuberculosis . . . the FAITH is in the proved methods of your national, state, and local tuberculosis associations.

The PLEDGE is your joining with 13,000,000 of your fellow Americans who this year will buy and use Christmas Seals.

## Motor-Vehicle Registrations To Hit 54,700,000 in 1953

Motor-vehicle registrations in the United States are continuing to climb and are expected to reach 54,700,000 for 1953, according to an estimate of the Bureau of Public Roads of the U. S. Department of Commerce.

Passenger cars will number 45,035,000, a 2.8 percent increase over 1952, while trucks and buses are expected to total 9,674,000, a 2.4 percent rise. California, with 5,405,000 registrations, will lead all other states by more than 1,000,000 vehicles. The second ranking state, New York, for the first time will pass the 4,000,000-mark.

The largest gains are taking place in the 11 western states, with increases ranging from 6.3 to 1.8 percent, and averaging 4.3. Next in line are the 16 southern states and the District of Columbia, with an average increase of 2.6 percent. The 9 northeastern states rank third, with a 2.4 percent rise; and the 12 north central states, with an average gain of 2.2 percent.

The Morrison-Knudsen Company, Boise, Idaho, has brought in excavating, screening, and crushing equipment near Durkee (Baker County) Oreg., where it proposes to quarry limestone from a large deposit. Tests are being undertaken to determine the suitability of the stone for use in sugar refineries in southeastern Oregon and southwestern Idaho.

## Brazil Offers Exemption From Duty and Taxes To Cement Manufacturers

A measure enacted by the Brazilian government in August of this year extends to cement-plant equipment five years' duty-free entry and exemption from consumption and other import taxes except the 2 percent ad valorem social security tax. This concession was made to induce expanded cement production by plants already established in Brazil and to encourage the installation of new facilities.

Exemptions apply to machinery, tools, and equipment for the manufacture of cement; to auxiliary equipment; and to materials to be used for processing raw materials, production and transmission of electric power, transportation of raw materials and finished products, and for physical and chemical laboratories.

To qualify for duty and tax exemptions a company must meet the following requirements: be domiciled and registered in Brazil; have a minimum capital of 25,000,000 cruzeiros; have a planned or existing plant with a capacity of at least 30,000 tons of cement; and have at its disposal limestone and clay deposits sufficient for 15 years' consumption. In addition all plans, specifications, and details for the establishment of facilities must be presented in advance for examination by the Ministry of Agriculture. Companies wishing exemption must deposit with the National Treasury a guaranty amounting to 100,000 cruzeiros, must have a plant in operation with imported equipment within 18 months of an exemption grant, and must maintain primary schools for the children of their employees.

## Rogers Operation Humming Near Government A-Plant

Operations of Ralph Rogers & Company near the atomic-energy plant to be built in Pike County, Ohio, are proceeding at full speed. Officials of the Bloomington, Ind., company state that its crew is removing limestone from a seam about 15 miles west of Pikestown. The deposit is 103 feet deep and covers several acres.

The Rogers company has set up a portable crusher which can turn out 600 to 700 t.p.h. of crushed stone. About 200 trucks leased by the firm haul the stone 23 miles to the A-plant, where it is used for roads, parking areas, and plant foundations.

## Natl. Safety Council Issues 1952 Accident Rates Series

*Accident Rates—1952* for the mining and quarry industries is one of a series of booklets recently published by the National Safety Council. This booklet contains the 1952 accident experience of all companies reporting to the council. Data for much of the material was obtained from the United States Bureau of Mines. Similar booklets are published by the council for 21 other types of industries.

Operations cited for outstanding achievements in safety include limestone, asbestos, salt, and gypsum mines, and five quarries.

The booklets are priced at 35 cents per copy (1 to 99), and 29 cents per copy (100 or more) to members of the council. Prices are double these amounts to nonmembers.

## Second $125,000 Vessel Joins N. Y. Trap Rock Fleet

Officials of the New York Trap Rock Corporation have announced the launching of the second of 12 new scows being built at a total cost of $1,500,000 by Sound Shipbuilding, College Point, Long Island. With the addition of the new scow, Trap Rock's fleet now numbers 170 deck scows.

The new craft was christened the *Anthony Bova* in honor of a 30-year employee of Trap Rock. At the ceremony Wilson P. Foss III, president of the corporation, presided.

Mr. Bova was presented with a silver pitcher to commemorate the christening. The traditional christening act was performed by Mrs. John Brandon, Mr. Bova's daughter.

The first of the new scows was christened recently in honor of Miss Lillian M. Byers, assistant secretary of the corporation. (See PIT AND QUARRY, October, 1953, page 81.)

## June Lime Sales Steady—Jan.-June Volume up 12%

In June, 1953, domestic sales of open-market lime (710,965 short tons) were virtually the same as in the previous month, according to reports by producers to the U. S. Bureau of Mines. Sales for the first six months of 1953 totaled 4,276,803 tons—an increase of 12 percent over the same period in 1952. The annual lime burning capacity as of June, 1953 (assuming that the kilns are operated 330 days per year, and excluding kilns which have not been operated within the last 3 years), is estimated by the producers to be approximately 9,200,000 tons. This represents an increase of 7 percent over the 8,600,000 tons reported in June, 1952.

## Limestone-Gypsum Carrier Unloads 18,000-Ton Cargo In Fours Hours or Less

The S. S. *John J. Boland*, a new lake boat equipped with self-unloading machinery capable of discharging an 18,000-ton cargo of limestone in four hours or less, recently made her maiden voyage.

The craft, built in Manitowoc, Wis., at an estimated $6,700,000, is owned by the American Steamship Company of Buffalo, which owns 17 other vessels on the Great Lakes for the transportation of coal, coke, gypsum and limestone. She has a 60-ft. keel, burns coal, and travels at a speed of 16¼ m.p.h.

By means of the self-unloading equipment, designed by Hewitt-Robins, Inc., cargo can be transferred from ship to shore at least one-third faster than older unloaders. A conveyor and elevator system in the hold brings the cargo to deck level. There it is automatically transferred to another conveyor mounted on a 250-ft. boom which swings out from the side of the boat and deposits the material in neat piles on the shore without the aid of land-based equipment of any kind.

## U.S.A., Turkish, Israeli Firms In $11,000,000 Joint Project

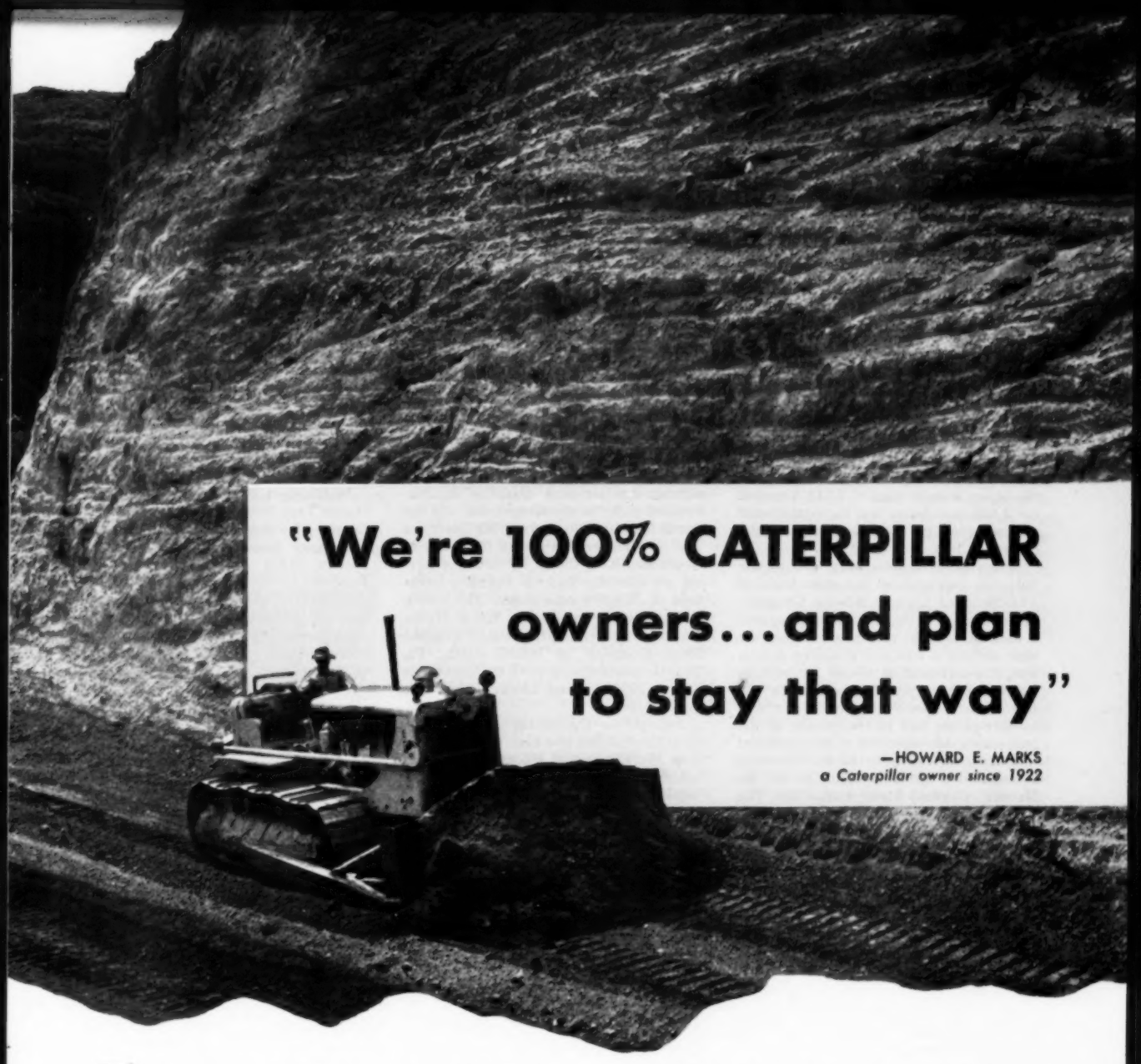
Three NATO (North Atlantic Treaty Organization) installations will be jointly constructed for the Turkish Ministry of Public Works, Bureau of Airports, at a cost of $11,000,000 by Solel Boneh (Israel's largest construction company), the American firm of P. Kretzer and Son of New York, and the Turkish firm of Yol ve Yapi. The three companies were chosen after bids had been submitted by 33 international construction companies.

William Kretzer, president of the New York firm, said that construction would start now and continue for a year. He added that large quantities of cement from the Nesher cement plant near Haifa, would be shipped to Turkey for this purpose.

**Lime Sold by Producers in the United States, in Specified Periods of 1952-53, by Types and Major Uses (Short Tons)[1]**

| | May | June | | January-June | |
|---|---|---|---|---|---|
| | 1953 | 1953 | 1952 | 1953 | 1952 |
| By types: | | | | | |
| Quicklime | 538,775 | 553,979 | 379,534 | 2,837,624 | 3,328,629 |
| Hydrated lime | 172,899 | 165,916 | 153,577 | 934,441 | 948,174 |
| Total lime[2] | 711,874 | 710,965 | 451,971 | 3,804,965 | 4,276,803 |
| By uses: | | | | | |
| Agricultural: | | | | | |
| Quicklime | 9,796 | 1,839 | 2,214 | 28,577 | 31,527 |
| Hydrated lime | 23,789 | 14,217 | 15,977 | 122,591 | 116,277 |
| Total | 33,785 | 16,085 | 19,191 | 151,128 | 147,804 |
| Building: | | | | | |
| Quicklime | 16,143 | 18,284 | 18,731 | 102,762 | 97,914 |
| Hydrated lime | 81,929 | 82,294 | 81,072 | 452,854 | 454,311 |
| Total | 98,372 | 100,578 | 99,773 | 555,326 | 552,225 |
| Chemical and other industrial: | | | | | |
| Quicklime | 318,532 | 336,576 | 231,078 | 1,843,272 | 2,227,115 |
| Hydrated lime | 66,781 | 63,505 | 56,478 | 358,785 | 377,786 |
| Total | 385,123 | 400,081 | 287,556 | 2,202,278 | 2,604,701 |
| Refractory (dead-burned dolomite) | 193,991 | 194,221 | 47,541 | 895,333 | 1,172,073 |

[1] Also includes a small quantity of captive tonnage (6-7 percent of the total reported herein) to maintain comparability with the annual lime statistics.
[2] Approximately 60 percent of lime produced is high calcium and 40 percent high magnesium.



# "We're 100% CATERPILLAR owners...and plan to stay that way"

—HOWARD E. MARKS
*a Caterpillar owner since 1922*

This D8 with No. 8U Bulldozer is one of three Caterpillar-built machines which handle the total output of Skyline Quarry, Belmont, Calif. Daily production is 4000 tons of base rock and concrete aggregate for this and one other D8 with U-'dozer, and a rubber-tired DW10 with No. 10 Scraper.

"We find that Caterpillar equipment has real substance," says the owner, veteran quarryman Howard E. Marks. "It's easy to get good service, and by standardizing on Cat* equipment we cut expenses. We're 100% Caterpillar owners, and plan to stay that way."

Many quarrymen winterize their jobs by standardizing on Caterpillar machines. These husky yellow units are quick-starting and need no pampering, even in subzero weather. They have stamina to work in frozen materials, and balance and traction to keep working in tricky footing. They're built to work as far into the winter as *you* want them to work, and then to get an early start again in the spring.

Standardizing on Caterpillar pays off, too, in increased operator familiarity and ease of maintenance, and in one-stop dealer service. Because Caterpillar machines are noted for long, trouble-free work life, they return a profit for many years.

Caterpillar has the industry's fullest line of equipment, with tractor power and blade capacity *matched* for smooth performance and long life. Ask your Caterpillar Dealer for an on-the-job demonstration of the tractor-'dozer team that best suits *your* needs.

Caterpillar Tractor Co., Peoria, Ill.

**CATERPILLAR***

*Both Cat and Caterpillar are registered trademarks—®

**WINTERIZE YOUR JOB WITH CAT EQUIPMENT**

# Standard Lime and Stone Co. Wins N.C.S.A. Safety Contest

THE injury experience at operations enrolled in the National Crushed Stone Association Safety Competition of 1952, while not so favorable as in 1951, was one of the best in the 27-year history of the contest, according to the U. S. Bureau of Mines. Although the injury record of the competing operations has not been improved in each competition year, a decidedly progressive improvement has been shown over the 27-year span of the contest. The injury frequency rate of 21.193 per 1,000,000 man-hours of exposure to hazard in 1952 was lower in only 6 of the past contest years, and the injury severity rate of 3.514 days lost per 1,000 man-hours was the sixth-lowest rate recorded since the beginning of the contest in 1926.

Highest safety honors were won by the Bakerton underground limestone mine of The Standard Lime and Stone Company at Bakerton, W. Va., for having operated a total of 177,946 man-hours during the year without a lost-time disabling injury. For this outstanding safety accomplishment, a bronze plaque provided by the *Explosives Engineer Magazine* was won by this plant; and in recognition of the part which the employees at this plant had in making this safety record possible, each is awarded a symbolic certificate by the National Crushed Stone Association. The Bakerton mine enrolled in this competition in 1946 and, except in 1950, has engaged actively in the contests. During its 6 years of participation it has operated a total of 744,888 man-hours with but 6 lost-time injuries and 219 days' loss of injury disability. The frequency and severity rates during its years of competing were 8.05 and 0.29, respectively, each well below the 27-year contest averages and the averages for any year in which the plant was a competitor for top honors. The employees and supervisors at the Bakerton operation have proved the value of joint co-operation in well-organized and efficient safety programs.

The Security limestone quarry of the North American Cement Corporation at Hagerstown, Md., ranked second in the 1952 contest, with the outstanding achievement of being worked 169,113 man-hours without any lost-time disabling injuries. In third place in the competition was the North Branford No. 7 trap rock quarry of The New Haven Trap Rock Company at North Branford, Conn., by virtue of having no disabling injuries during a worktime of 129,945 man-hours. The fourth ranking operation was the White Haven sandstone quarry of The General Crushed Stone Company at White Haven, Pa. This plant was operated 95,186 man-hours during 1952 without having a lost-time injury.

*Injury-Free Operations* — The operations listed below attained injury-free records in 1952 and in recognition of their achievements, received Certificates of Honorable Mention from the National Crushed Stone Association. Including the trophy winner, these operations were operated 945,421 man-hours, or 15 percent of the total worktime of all plants enrolled in the competition.

Bakerton mine, The Standard Lime and Stone Company, Bakerton, W. Va.—177,946 man-hours.

Security quarry, North American Cement Corporation, Hagerstown, Md.—169,133 man-hours.

North Branford No. 7 quarry, The New Haven Trap Rock Company, North Branford, Conn.—129,945 man-hours.

White Haven quarry, The General Crushed Stone Company, White Haven, Pa.—95,186 man-hours.

Rock Hill quarry, The General Crushed Stone Company, Quakertown, Pa.—80,518 man-hours.

Stephens City quarry, M. J. Grove Lime Company, Stephens City, Va.—70,440 man-hours.

Jordanville quarry, The General Crushed Stone Company, Jordanville, N. Y.—68,939 man-hours.

Cedar Hollow quarry, Warner Company, Devault, Pa.—62,167 man-hours.

Wallingford No. 1 quarry, The New Haven Trap Rock Company, Middlefield, Conn.—59,410 man-hours.

Prospect Stone Plant No. 6 quarry, Eastern Rock Products, Incorporated, Prospect, N. Y.—31,737 man-hours.

*Statistics of the Competition*—The over-all safety record at the 42 operations enrolled in the 1952 competition was better than the average for the 27 years of the contest. Thirty-six open quarries completed the year's contest with an injury frequency rate of 22.16 per 1,000,000 man-hours and a severity rate of 4.16 days per 1,000 man-hours. Although these rates were not so favorable as the respective rates of 19.30 and 2.70 in the 1951 competition, they were, nevertheless, consistent with the long-term improvement made since the origination of the competition.

The injury frequency rate at the 6 competing mines was 16.70, and the severity rate was 0.513—each better than its corresponding rate in the 1951 contest. The 1952 frequency rate was 11 percent lower than the previous year's rate, 46 percent lower than the 27-year average rate for this group, and the fourth-best rate in the history of the contest among similar operations. The 1952 severity rate followed a similar pattern, but was more pronounced in some respects. The rate dropped 68 percent in 1952, as compared with 1951; it was 87 percent lower than the 27-year average, and the fourth least severe in the entire history of the competition. The over-all injury experience at underground mines in 1952 was better than in any year since record rates were established in 1938.

Fourteen states were represented among the 42 operations enrolled in the 1952 competition—New York, Pennsylvania, Virginia, Connecticut, Maryland, Massachusetts, Ohio, Texas, West Virginia, Illinois, Kentucky, Michigan, Oklahoma, and Tennessee.

*Injury Data*—Of the injuries with stated causes at the participating plants in 1952, falls of persons resulted in 19 disabilities—more injuries than from any other cause. This type of injury represented 16 percent of the total accidents with reported causes. Accidents involving the handling of materials resulted in 14 percent of the total; 13 percent were

## California Firm Acquires Alumina Plant from R.F.C.

The Harvey Machine Company of Torrance, Calif., has purchased the alumina-from-clay plant at Salem, Oreg., which was built during World War II, when scarcity of alumina-bearing raw materials was extremely acute, from the General Services Administration. Purchase price of the plant, pictured in the accompanying illustration, was $325,000. Cost to the government was in the neighborhood of $5,000,000.

The Harvey company recently began preliminary work at The Dalles, Oreg., on its new aluminum-reduction plant, which will obtain electric power from the powerhouse at The Dalles Dam, now under construction on the Columbia River.

● The alumina-from-clay plant at Salem, Oreg., recently purchased by the Harvey Machine Company of Torrance, Calif., from the Reconstruction Finance Corporation.

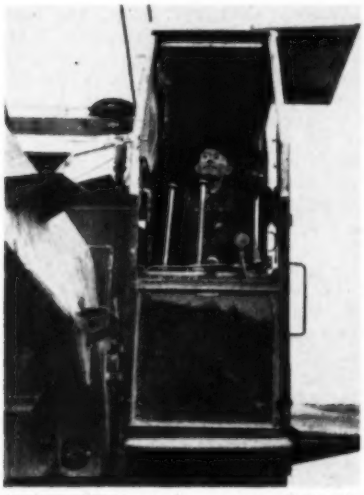
caused by falls or slides of rock, 12 percent by falling objects, and 9 percent by haulage accidents; and flying objects and machinery accidents were equally responsible for 16 percent of the total injuries. The most severe injuries during the 1952 competition resulted from falls or slides of rock, falls of persons, and from haulage and machinery accidents. These four agencies were responsible for 95 percent of the total number of days of disability.

*Conditions of the Competition* — This safety competition among operations in the crushed stone industry is conducted by the Bureau of Mines under the same rules as the National Safety Competition. The same records are used in both contests. However, there are two additional requirements that must be established before a crushed stone operation may participate in this competition: (1) It must have commercial production of crushed stone, and (2) it must be a member of the National Crushed Stone Association.

## Ohio Shovel Operator Finds Big Unit a Pushover to Handle

At the National Lime & Stone Company's operation at Findlay, Ohio, a 1¾-cu. yd. shovel once responded to a rush order by loading six rail cars—370 tons—in one hour. To make the achievement even more unusual, the operator of the shovel, Dave Risner, did the job with only one arm.

Since 1937 Mr. Risner has had to work with just his left arm, since it was



● Dave Risner at the controls of his air-operated shovel.

in that year that he lost his right arm while assisting with a conveyor repair job. He had been operating shovels since 1926, and decided at the time of the accident to go right on. In 1945 he began working at National.

About a year ago the company purchased a Marion 372 "for its mobility and versatility," according to Superintendent E. C. Redick. Mr. Risner really can go to town, for the 372 is 100 percent air-controlled; and in addition, it has an extra air valve located near the operator's right shoulder for tripping the dipper door.

## Brazilian Concern Plans Plant with German Equipment

It has been reported that Cia. de Laminacao e Cimento Portland Pains, S.A., of Brazil will build a cement plant at Divinopolis, near Belo Horizonte, capital of the state of Minas Gerais.

The plant will have the latest type of German machinery and will be a dry-process operation. Among the items of equipment will be a 120-ft. Lepol kiln, to be supplied by Polysius GMBH, Neubeckum, West Germany.

## New Plant of Gary Slag Corp. Producing Light Aggregate

The Gary Slag Corporation recently completed construction of a new lightweight aggregate plant on the property of the United States Steel Corporation at Gary, Ind. An entire year of experiments and construction was necessary to complete this large-capacity plant.

R. Newton McDowell, president, and Mrs. Donna Mills, vice-president, head the Gary Slag Corporation. P. J. Mack, general superintendent and expert on the processing of heavy and expanded slag, will direct production of this lightweight aggregate, known as Garylite. The new material is now in production. Sales of Garylite are being handled by Raymond J. Graham, sales engineer.

The Gary Slag Corporation also operates a lightweight aggregate plant at the facilities of the American Steel & Wire Division, United States Steel Corporation, in Duluth, Minn.

## State Liming Program Discussed at Meeting Of Stone Producers

Producers and suppliers of liming materials in the agricultural limestone division of the Pennsylvania Stone Producers Association met on September 28 in Harrisburg, Pa. The new handbook of the P.M.A. was announced by Chairman Leonard S. Fry, who called upon C.E. Cassel, chairman of the P.M.A. committee, for comments on the manual.

Others participating in the program included the following: Mark Shuman, newly-appointed administrative officer for the Pennsylvania P.M.A. committee; Herbert Albrecht, head, agricultural extension service, Pennsylvania State College; J. H. Eakin, assistant professor of agronomy; and H. H. Wagner, association secretary. Some time was spent in a discussion period on promotion and advertising methods. Chairman Fry appointed the following to serve on a committee to develop educational literature: David Shroyer, F. E. George, Glenn Hawthorne, W. O. Faylor, and H. H. Wagner.

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Fire at the Parry Quarry in Menoher Heights, Pa., caused damage estimated by the owner, Oliver Parry, at more than $20,000. Mr. Parry said the loss may go higher after a thorough check is made of damage caused to machinery, most of which was new. Three buildings were damaged, including a garage, a lime storage house, and a crusher building.

## Loading Operations Speeded By Parallel Discharge Belts

The distinguishing features of the semi-portable, 150-t.p.h. aggregates plant operated by the M-P Materials Corporation of Salem, Oreg., are three short, parallel discharge belts at truck-body height which speed up the loading-out operation.

The plant was observed recently at its present location at Keizer, a Salem suburb. A slack-line cableway was excavating from a pond, building a raw surge pile. Recovery was by way of a belt operating in a tunnel beneath the pile. Processing equipment included El-screens, a Traylor TY 28-in. primary crusher, and a Telsmith Gyrasphere for secondary breakage. Concrete sand was drag-dewatered and stockpiled separately.

M-P Materials also operates a stationary plant in Salem. The portable unit described is moved to specific locations where production on the job is more economical. Leo Nelson supervises all production.

● Three parallel belts load the sand and gravel directly into trucks in M-P Materials Corporation's operations.

## 1953 Construction Totals Continuing Present Trend—May Top $34,000,000,000

Expenditures for new construction this year are expected to reach 34⅔ billion dollars, exceeding last year's record by 6 percent or 2 billion dollars, according to revised outlook estimates prepared jointly by the Building Materials Division of the U. S. Department of Commerce and the U. S. Labor Department's Bureau of Labor Statistics. This year's dollar volume of new construction also will represent a new peak in work actually put in place, when adjustment is made for price changes.

The continuation of the steady postwar climb in construction activity into 1953 will result primarily from a sharp rise in commercial building, and substantial increases in expenditures for privately-owned public utility construction, private housing, and schools and highway work. The only major types of construction for which expenditures are expected to decline are private industrial construction and farm and hospital building.

Private and public construction both will share in the 1953 rise. The dollar volume of private work is expected to reach the unprecedented sum of $23,100,000,000, or two-thirds of the total. The sharpest upturn in private activity this year will occur in commercial building, for which outlays will increase about 45 percent to a peak of $1,700,000,000.

One-third of all new construction activity and half the outlays for private work will be for residential building ($11,700,000,000). The 5 percent increase over 1952 in expenditures for new nonfarm dwelling units will occur in spite of a decline in units started. This results from higher prices and the unseasonally large number of dwellings begun during the latter part of last year, which were still under construction early in 1953.

## Promotion Plans Laid for '54 At Permalite Sales Meeting

The first Permalite national sales meeting, held September 21 through 25 at the Chase Hotel in St. Louis, Mo., exceeded the most optimistic expectations, both in attendance and in results, according to De Otis Loring Marlett, vice-president of Great Lakes Carbon Corp. and general manager of its Perlite Division.

Permalite's 17 franchisees, located throughout the United States, sent 37 representatives to St. Louis to discuss sales and advertising with the following: D. L. Marlett; Edward A. Harris, operations manager; Paul W. Leppla, technical director; Walter Addison Watson, advertising manager; and J. John Brouk, national sales agent.

Franchisees expressed appreciation for the complete program of advertising, sales promotion, and public relations outlined for the coming year, since it has been designed to provide each distributor with sales aids to meet his local problems and to identify his firm with the larger national advertising program.

Outstanding among the sales promotional material is a new and authoritative *Permalite Specifications Manual* covering the use of Permalite in roof decks. Four additional technical publications, just completed, were reviewed at the meeting, and soon will be available to the trade.

A further step forward was made by the creation of a committee for research and development. J. John Brouk, in discussing the sales problems of the industry, pointed out that the full potentialities of perlite have never been explored, and that the present volume represents but a small fraction of the potential market. The new committee, headed by William R. Howell, will explore several promising new ideas and work to develop new uses for Permalite.

To top off the meeting, a group of franchisees were flown in the Great Lakes Carbon Corporation company plane to Colorado to tour the Permalite-Alexite mine at Rosita and the Permalite-Alexite processing plant at Florence.

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According to company officials of the Blue Diamond Corporation of Los Angeles, the firm is spending $2,000,000 to expand its mining and gypsum product plant facilities at Blue Diamond, Nev., from 900 to 1,300 tons per day.

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Ideal Cement Company's old plant at Portland, Colo., was shut down last summer. The old facilities had been used intermittently to supplement production of a new plant built at the end of World War II.

● Representatives of 17 Permalite dealers at the first annual sales meeting in St. Louis.

## Kaiser Aluminum Promotes Five in Salinas Area To New Assignments

Five new appointments at the company's chemical plants in the Salinas, California, area were announced recently by Frank M. Cashin, Chemical Division manager for the Kaiser Aluminum & Chemical Corporation.

William T. Burns, Salinas, has been appointed assistant general superintendent of the Natividad dolomite and Moss Landing refractory and magesia plants; Jack D. Moore, Salinas, has been named superintendent at the Moss Landing magnesia plant; J. Evan Hall, San Jose, is now superintendent at the Natividad plant; Clarence A. Rick, Gilroy, is the new assistant superintendent at the Moss Landing refractory plant; and Arthur W. Vettel, Watsonville, is assistant superintendent at the Moss Landing magnesia plant.

Mr. Burns, who will assist D. M. Kerr, general superintendent of the Chemical Division's California plants, has been with the Kaiser organization since 1941, when he was a junior engineer and later operations superintendent at the Permanente, Calif., magnesium plant. During his association with Kaiser Aluminum he has been senior research chemist at the Baton Rouge, La., refining plant and hot line supervisor at the Trentwood, Wash., rolling mills. Prior to his recent appointment, he was superintendent at the Moss Landing magnesia plant. He is a graduate of the University of Alaska.

Mr. Moore, formerly superintendent of the Natividad plant, first joined the corporation in 1942 as a junior engineer at the Permanente magnesium plant. During his career with the organization he has been senior engineer for the Salinas area plants and assistant to the works manager of the Chemical Division's plants.

Mr. Hall, recently superintendent of the Division's ferro-alloys plant at Permanente, has been with the Kaiser organization since 1942, serving at the Permanente magnesium plant in various capacities and later as chief chemist and assistant superintendent at Natividad.

Mr. Rick, who was assistant superintendent at the Moss Landing magnesia plant before his recent appointment, has been with the company since 1946, beginning as a ceramic engineer at the company's Milpitas, Calif., laboratory.

Mr. Vettel, a 12-year man with the organization, was formerly supervisor in the research department at the Moss Landing magnesia plant.

### ● Correction

Bemis Bro. Bag Co., St. Louis, Mo., has called to our attention an error which was made in the August issue of Pit and Quarry, page 135, wherein we stated that, "C. W. Aken . . . started in the bag industry in 1932 with the Jaite Company, which was purchased by Bemis in 1941."

Bemis purchased an Oregon corporation, the Jaite Company, with a plant at St. Helens, Oreg. The Jaite Company at Jaite, Ohio, was not involved.

# 30 years ago in Pit and Quarry

By WALTER E. TRAUFFER

THE November, 1923, issue of PIT AND QUARRY reflected the improving conditions in the nonmetallic minerals industries. Numerous items told of increasing output and of the construction of new plants and the expansion of existing operations. The output of portland cement in September, 1923, was 13,109,000 bbl., the largest of any month in the history of the industry. Production for the first 9 months of 1953 was over 101,000,000 bbl., or more than for any full year prior to 1922. Business in all sections of the country was reported to be good.

In the cement industry considerable plant expansion was under way. The Pacific Portland Cement Company was reported to have begun the construction of a $2,000,000 cement plant at Redwood City, Calif. Capacity was to be 4,000 bbl. daily. The Clinchfield Portland Cement Company was reported planning a new $3,000,000 plant at Perry, Ga. The Acme Cement Corporation, Acme, N. Y., increased its capital $700,000 to finance the expansion of its plant. The Kansas Portland Cement Company, a subsidiary of the International Cement Corporation, had begun work on a new $1,000,000 plant at Bonner Springs, Kans. A general contract for its construction was awarded to the Macdonald Engineering Co. Work was in progress on the Arrowhead Portland Cement Company's plant at Cajon Pass, Calif., which was to have a capacity of 1,000,000 tons annually. Another plant, with a capacity of 75,000 bbl. monthly, was planned for Anna, Ill. A new plant was also being built at Manitowoc, Wis.

In the lime industry a new 100-ton-per-day plant had been completed at Walnut Creek, Calif., by the Mount Diablo Lime Marl Company, and plans were under way to double its capacity with two new kilns at a cost of $42,000. The Pacific Portland Cement Company was progressing rapidly with the construction of a $1,000,000 gypsum and plaster plant at Gerlach, Nev.

In the sand-and-gravel industry the Seattle Sand & Gravel Company had near completion a $70,000 plant near Seattle, Wash. The Central Sand & Gravel Company of Memphis, Tenn., was completing the reconstruction of its $150,000 plant, which had slid into the river due to a cave-in of the bank. The actual loss due to this disaster was $50,000. The Kaiser Gravel Company was working day and night to finish its new plant at Livermore, Calif., in time to furnish large contracts for material for road construction. The new plant of the Pratt Rock & Gravel Company at Folsom, Calif., was reported near completion. The De Smet Sand & Gravel Company was progressing rapidly with the construction of its plant at De Smet, S. D.

Stine and Ellis had recently completed a new concrete central-mixing plant in Los Angeles with a capacity of 365 cu. yd. daily.

The Leathem D. Smith Stone Company's crushed stone plant on Sturgeon Bay, Wis., had been recently expanded to a capacity of 2,500 tons daily, and this operation was described in detail. Another article described the new crushed stone plant of the Lutz Stone Company at Oshkosh, Wis.

Also described was the new plant of the Illinois Sand & Gravel Company at Oswego, Ill., which had a capacity of 100 cars daily. Another article featured the plant of S. E. Willey near Cincinnati. A detailed account of the concrete brick plant of the Arundel-Shope Brick Company at Baltimore, Md., was also given.

An indication of the lack of mechanization in these industries at the time was an article entitled, "Do Steam Shovels Pay?" It was proved conclusively that in most operations loading in pits and quarries could be done more cheaply mechanically than by hand labor.

Safety also received considerable attention in this issue. One lengthy article told of the numerous safety measures which should be taken in and about a plant. Two other articles cited the advantages of precautionary measures in preventing costly breakdowns of machinery.

An item in this issue announced the resignation of J. R. Bakstad as manager of the Chicago branch office of the Good Roads Machinery Company. He had left to go into business for himself under the name of the Bakstad Machinery Company to design and completely equip sand and gravel plants.

## A.S.T.M. Publishes List Of New, Revised Specifications

The American Society for Testing Materials, through its administrative committee on standards recently approved new specifications and test methods and revised some of its existing standards. New tentative specifications were framed for gypsum concrete (C 317-53 T) and gypsum formboard (C 318-53 T), and a new tentative classification was made for single- and double-screened ground refractory materials (C 316-53 T).

Tentative revisions were made for inorganic aggregates for use in interior plaster (C 35-52 T), hydraulic hydrated lime for structural purposes (C 141-42), asbestos-cement corrugated sheets (C 221-49 T), asbestos-cement roofing shingles (C 222-49 T), asbestos-cement siding shingles and clapboards (C 223-49 T), and asbestos-cement pressure pipe (C 296-52 T).

Action was also taken to set up tentative revisions of standards in specifications for masonry cement (C 91-51), in the testing method for normal consistency of hydraulic cement (C 187-49), and in definitions of terms relating to thermal insulating materials (C 168-51) and to materials for roads and pavements (D 8-52).

● A recent safety record achieved by the Iola, Kans., plant of the Lehigh Portland Cement Company is no secret, as witness the signboard pictured above. Posing with the sign are Lester McClure, president of the union local No. 104, U.C.L. & G.W.I.W., and Elmer Goodner, foreman. The 365 days signify that the Iola plant personnel had won the company's safety shoe award, which nets each man one pair of "foot-savers" for his part in achieving the safety record. Now the men are shooting at the 1,000-day mark. Beginning in 1926 and ending in 1939, Iola workers set a record of 4,465 continuous days without a lost-time accident. H. G. Collins is manager of safety and welfare, and R. E. Jones is plant manager.

## N.A.L.I. Annual Convention To Open Feb. 19 in Chicago

Plans for the 1954 convention of the National Agricultural Limestone Institute, Inc., at Chicago on February 19 and 20 are going forward at a rapid pace.

Sessions will be held at the convention headquarters, the Blackstone Hotel. Since the N.A.L.I. convention falls between that of the National Sand and Gravel Association and the National Crushed Stone Association, both in Chicago, there will be an opportunity for members to visit the machinery exhibit at the Conrad Hilton Hotel.

As usual, the executive committee will meet on the 17th and the board of directors on the 18th.

## New Facilities Being Erected For Phosphate Rock Concern

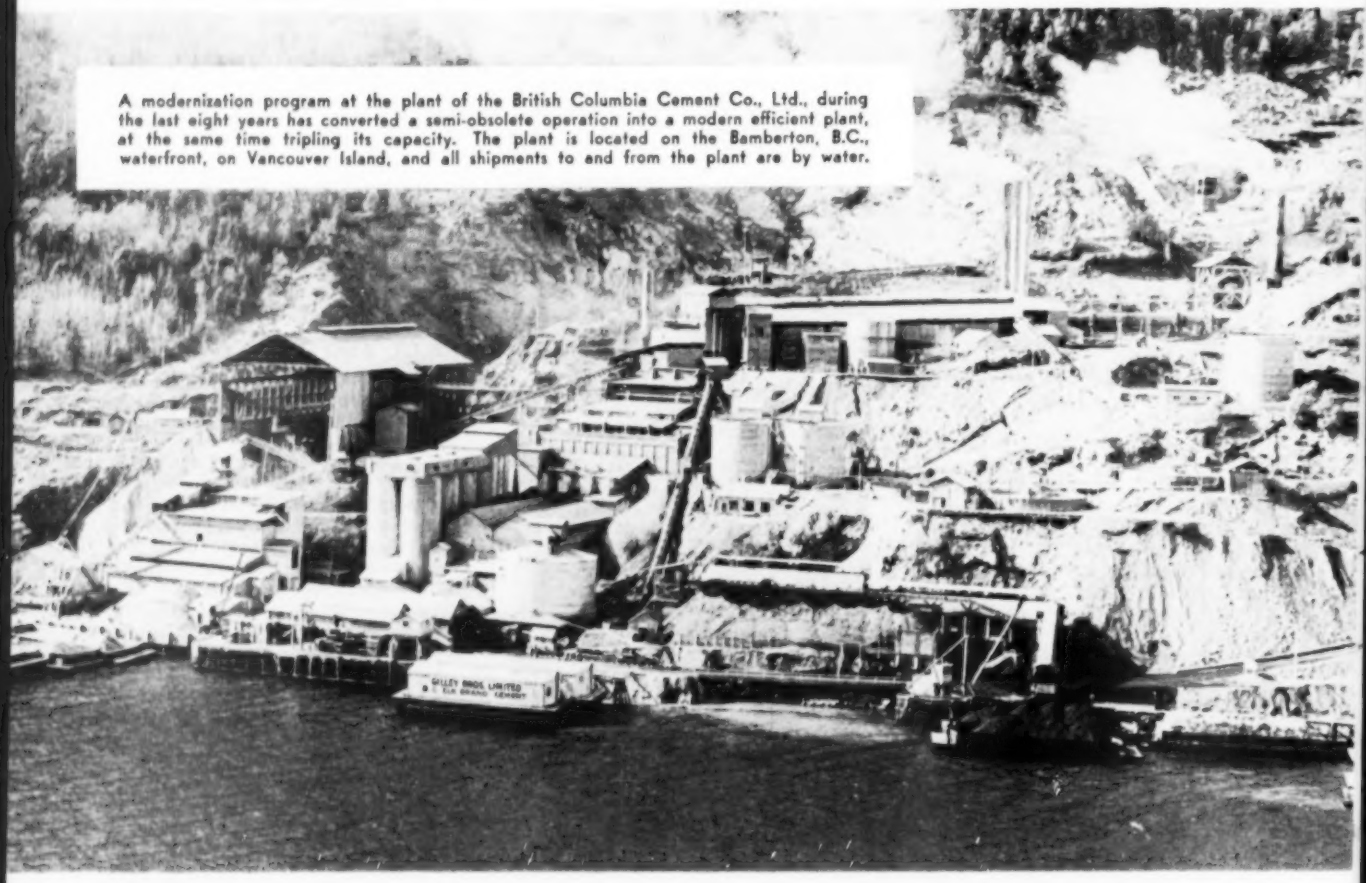
The American Agricultural Chemical Company, New York, producer of phosphate rock and manufacturer of fertilizers and chemicals for agriculture and industry, is constructing a complete fertilizer plant on Highway 65 at Cairo, Ohio, which will include a 24,300-sq. ft. standardized wet-mix steel building produced by the Luria Engineering Company, Bethlehem, Pa.

An additional dry-mix building will be erected by the A. J. Sackett Company, Baltimore, Md., which will also supply and install dry-mixing equipment.

# British Columbia Cement Company

# *Expands Bamberton Plant*

## Eight-year program triples plant output to meet growing demand.



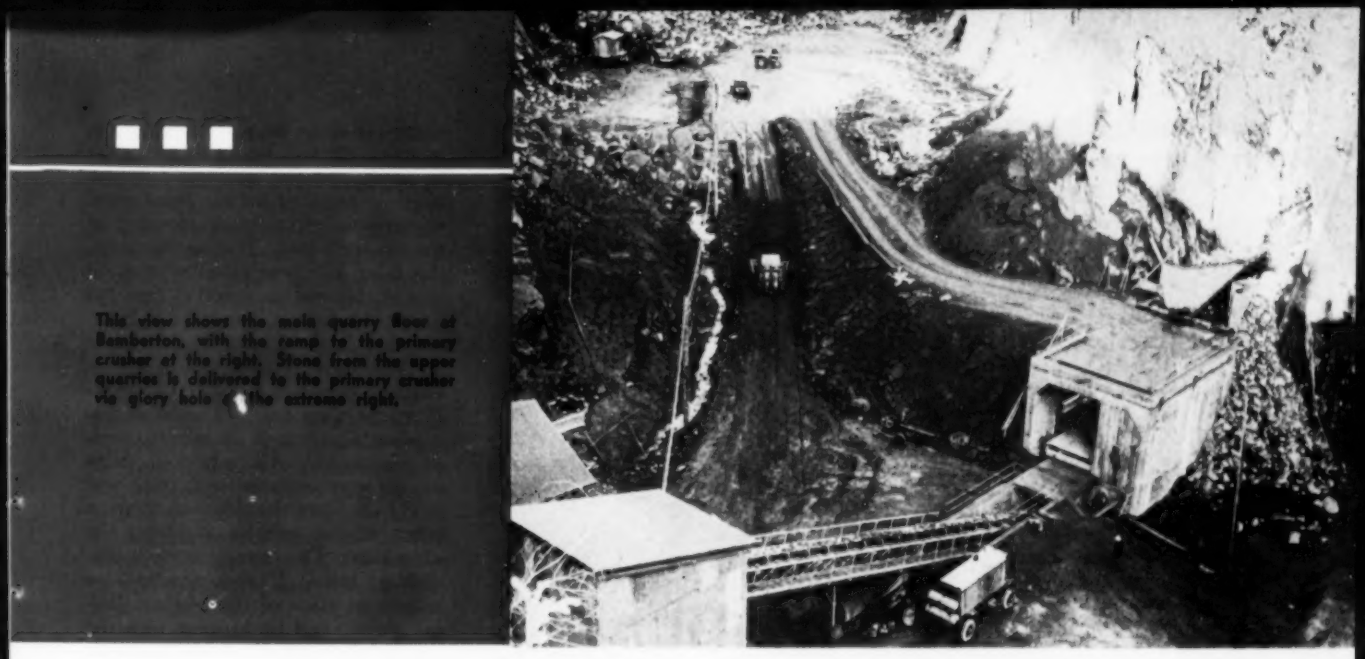
A modernization program at the plant of the British Columbia Cement Co., Ltd., during the last eight years has converted a semi-obsolete operation into a modern efficient plant, at the same time tripling its capacity. The plant is located on the Bamberton, B.C., waterfront, on Vancouver Island, and all shipments to and from the plant are by water.

another ON THE SPOT report

TO keep pace with the vigorous growth and increasing need for cement in the province of British Columbia, the British Columbia Cement Co., Ltd., has been expanding its plant at Bamberton, B. C., which supplies practically all of the province's requirements over an area as large as California, Oregon, and Washington combined.

Built in 1913, the plant has been enlarged and modernized during the last eight years from a small, semi-obsolete works with a capacity of 750,000 bbl. to a modern, efficient plant capable of producing 2,200,000 bbl. (Canadian) annually.* Currently the plant produces only standard portland cement to realize its maximum capacity, although work is now under way to make possible

*One Canadian barrel of 350 lb. compares with a U.S. barrel of 376 lb.



This view shows the main quarry floor at Bamberton, with the ramp to the primary crusher at the right. Stone from the upper quarries is delivered to the primary crusher via glory hole at the extreme right.

the handling of siliceous and iron-bearing ores in preparation for the manufacture of a wider range of cements.

The steps in this development will be more readily understood if the original plant design is described to some extent. Situated on the picturesque waterfront of Saanich Inlet, a few miles north of Victoria, the two-kiln plant was built during 1913 by the Associated Cement Manufacturers of London, England, and began producing in 1914. However, World War I, instead of precipitating a construction boom such as was experienced in World War II, brought building to a dead stop in that area, with the result that the plant was forced to shut down, remaining idle until 1921. During this period, the company reorganized under its present name and absorbed the assets of the Vancouver Portland Cement Company, whose quarry and plant were located at Tod Inlet on Vancouver Island. Two short kilns from the old Tod Inlet plant were dismantled and reassembled in the early '20's to build a third kiln for the Bamberton plant, providing the wet-process operation with a burning complement of three 185-ft. kilns shortly after production was resumed in 1921.

As laid out 40 years ago, the plant was unique in that the site selected was on a steep slope of a mountain immediately below the limestone deposit. Flat areas were excavated from the cliff-side at different elevations for the crushing plant, raw mills, kilns, and finish-grinding mill. This made it possible to develop a simple yet extremely efficient flow-sheet, as all materials fell by gravity from one stage to the next in the process. Stone was quarried at an elevation of 80 ft. above sea level, was carried horizontally to a primary crusher, from which it discharged by gravity to two secondary crushers on the next lower level.

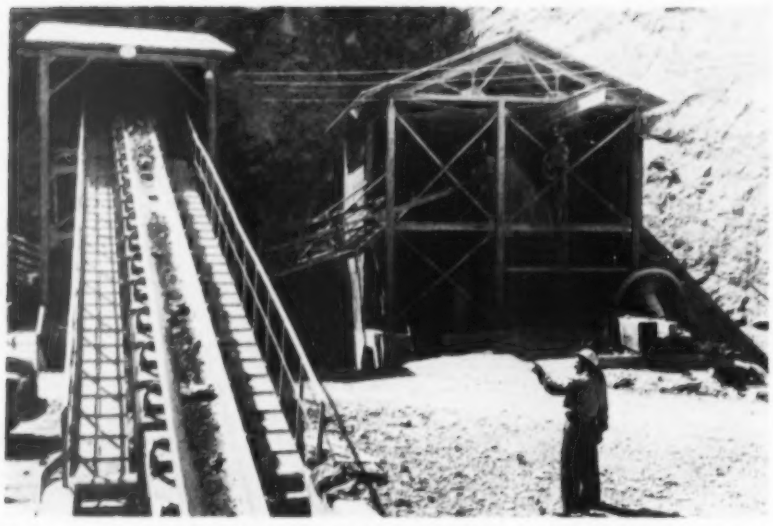
It was then carried by horizontal conveyor to the top of the raw-feed bins. The material dropped to table-feeders, and again to the preliminary ball mills. The ball-mill product dropped to the tube mills at a still lower level, and finally the tube-mill product went by gravity to the pumps at sea level.

The raw materials, in the form of slurry, were then pumped up to the mixing tanks, located 90 ft. above sea level, and subsequently to the kiln-feed tanks at the top level. From this point, the materials again descended through the kilns, coolers, finish mills and storage bins to the packing plant at sea level. The plant originally burned oil, which was pumped from sea level to the kiln room.

From the foregoing, the simplicity of the flow-sheet may be envisioned—two streams of solids, raw materials and finished product in various stages of processing, descending from the upper levels to sea level; and two fluids, slurry and oil, ascending from pumps at water level to tanks at the upper levels.

A young, dynamic man, N. A. Tomlin, is president and general manager of the company.

The modernistic new plant office building overlooks a thrilling view of water, islands, and the surrounding countryside.



The new crushing plant in this quarry includes a screen at the end of the belt (foreground) and the 5½-ft. cone crusher (right).

Another feature of simplification was introduced into the original design by selecting all processing units (most of them of British or European manufacture) of such size that only three ratings of electric motors were required for the entire plant—160, 60, and 15 hp. This made it possible to have complete spare coverage by carrying only three extra motors and switches, one of each size.

The raw-grinding department consisted of five 8- by 6-ft. primary ball mills and five 6- by 24-ft. tube mills, each driven by 160-hp. motors. The tube mills were originally lined with Silex blocks and charged with pebbles. It is also interesting to note that two elevators and two Trix separators were used to closed-circuit the ball mills to produce a minus 14-mesh product—probably one of the first attempts at closed-circuiting in a wet-process cement industry plant.

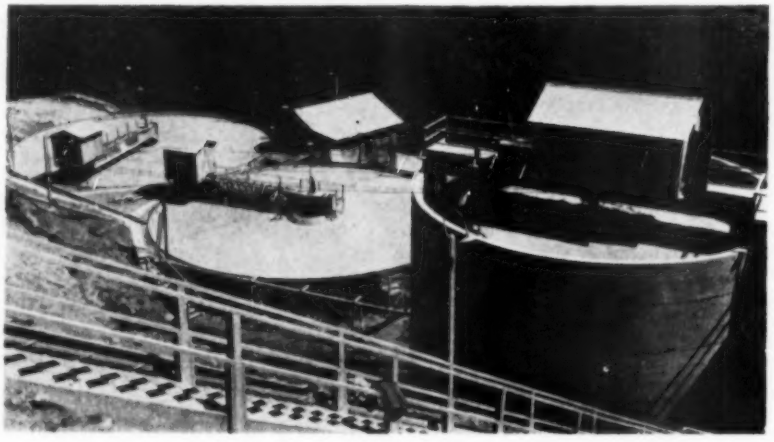
The original two kilns were 8 ft. 9 in. by 185 ft. They employed natural draft, were supported on four rollers, and were belt-driven by 60-hp. motors. At the next lower level were two 6½- by 70-ft. rotary coolers, belt-driven by 15-hp. motors. Immediately below the coolers was a 10,000-bbl. clinker-storage bin into which the coolers discharged by gravity. Below this bin was the finish-grinding department.

Finish grinding was done by four 6- by 15-ft. ball mills and four 6- by 24-ft. tube mills with gravity feed. The tube mills are identical to those on the raw side and were also originally Silex lined and pebble charged. These mills, which have been in almost continuous service for 40 years, are worthy of note because their shells are of welded construction — without rivets of any kind—and must surely have been among the very first all-welded units ever built! A rather unique feature of the clinker-grinding system was the introduction into the tube mills of a jet of steam which acted as a grinding aid. This practice, known locally as "hydrating", was introduced and patented by a man named Bamber, for whom the plant site, Bamberton, is named. After a few years, the steam jet was replaced by a fine water spray which over the years has proved equally as effective as a grinding aid. Experiments at the plant have proved that its use increases mill capacity by about 15 percent since both the steel balls and the lining, which are presently used, remain completely free from coating.

During the 1920-1930 period, a quarry was opened on Texada Island, some 90 miles away, to augment the supply of stone from the Bamberton quarries. It was towed to the plant by scows and put through a second stage of crushing on the Bamberton waterfront before being elevated to the raw-mill bins. During this time, the third kiln was installed and oil was abandoned in favor of coal for firing the kilns. The 12,200-B.t.u. coal is mined near the Tsable River on Vancouver Island and is waterborne to the plant, as indeed is everything the plant has ever required, including nearly half its requirements of limestone. All tube-mill Silex linings were replaced with steel, and steel balls were charged into them in place of the pebbles at about the same time. The change made it possible to install 300-hp. synchronous motors in place of the original 160-hp. drives, and to dispense with the use of three of the five raw tube mills and one of the four finish tube mills.

Except for the installation of an induced-draft fan and the enlargement of the burning zone on one kiln, the plant remained unchanged until 1946, when a program of modernization and expansion was undertaken.

The first step in the improvement schedule beginning in 1946 was to replace the old "bin" coal-grinding system with Raymond bowl-mill unit pulverizers. This involved the installation of new raw-coal-storage bins above the new pulverizers in the kiln room, and a belt-conveyor and elevator system to bring the coal up from the waterfront. The old coal-drying and grinding plant on the waterfront was converted into a coal-and-gypsum storage area, with a tunnel and belt-conveyor to recover from the piles. This belt delivers to a second conveyor, which carries to the kiln room, a distance of 400 ft. at an inclination of 22 degrees. The belt discharges to a 17-ft. Redler elevator, which lifts the coal 50 ft. vertically to the top of the new bins and



Three of the new slurry agitator basins near the water level.

puts it on a conveyor belt running across their length.

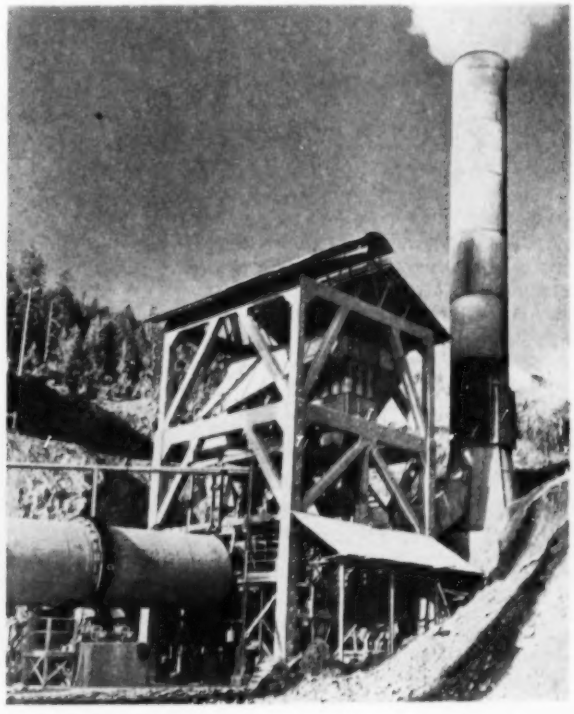
From this belt, which runs flat, the coal is scraped into the bins. The system, designed to carry 100 t.p.h. of coal, is also used to convey gypsum. The gypsum is scraped from the inclined conveyor to a cross-conveyor, which carries it to bins above the finish-grinding department. Scraping the gypsum from the troughed, inclined belt is accomplished in an interesting way by means of a flat, steel plate beneath the belt. The plate lifts the belt from the troughing idlers to a steel scraper arm above the belt. This arm is held against the top surface of the belt diagonally, and is raised up and out of the way when coal is being carried.

The next step in the program was to improve burning efficiency and kiln output by installing induced-draft fans, chain systems, and complete instrumentation. In addition to the usual oxygen recorders, draft indicators, speed indicators, slurry-feed indicators, etc., a very satisfactory system of automatic hood-draft control was introduced. This, it is felt, is more efficient than control of back-end draft because of variations due to ring formation and load conditions. The system, which was supplied by the Bailey Meter Company, consists of a pneumatic relay which opens or closes the louvres of the induced-draft fan so as to maintain the draft in the hood at any desired setting. So long as no change is made in the coal feed, a constant air-fuel ratio is maintained. Any change in coal feed calls for a new setting of the hood draft so as to provide optimum air, as indicated by the oxygen recorder on the stack gases. All instruments and control devices are located on the burning floor, so that the kiln operator has complete knowledge and control of all conditions. This system, in use for several years, in conjunction with the chain system designed by the plant engineering staff, has reduced fuel consumption from 1,450,000 to 1,200,000 B.t.u.'s per barrel (Canadian) in the 185-ft. long kilns.

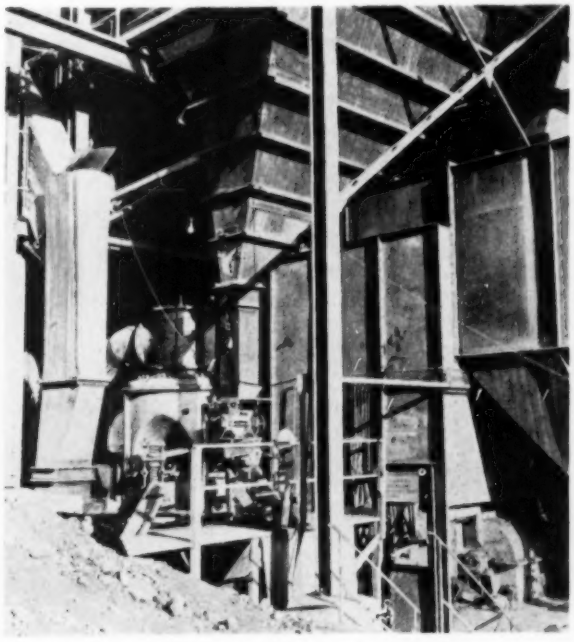
The method of synchronizing slurry feed with kiln speed is of interest, in that the direct current required to drive the d.c. motor on the slurry feeder is provided by an electronic rectifier rather than by a conventional motor-generator set. A

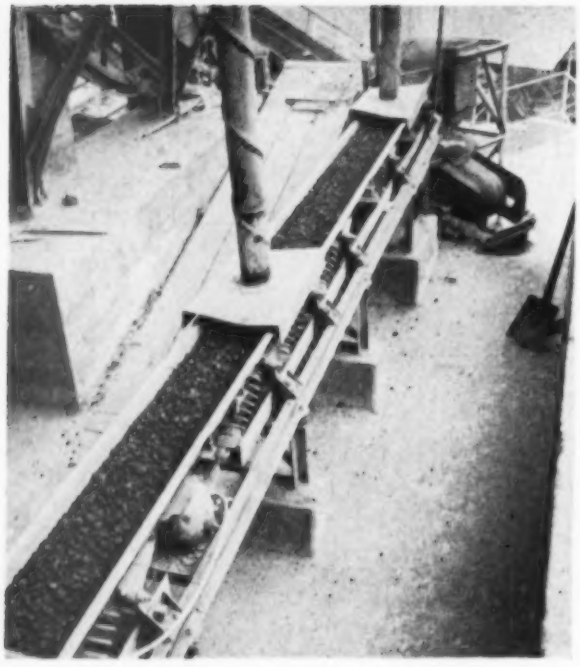
The new 350-ft. kiln, seen from the feed end. It is nearly twice as long as the three old kilns housed alongside. All four have a common firing floor.

At the feed end of the new 350-ft. kiln are the stack and the dust collector installation.



The coal hopper and the bowl-mill which fires the new kiln. At the right is the clinker breaker at the end of the cooler, with a duct for dust control and recovery just above.





A natural-frequency conveyor handles clinker from the new kiln and cooler.

Tacomotor generator driven from the kiln drive motor supplies control current to the tubes of the rectifier, and this affects the voltage and consequently the speed of the direct-current motor driving the slurry feeder. This arrangement not only synchronizes slurry feed with kiln speed, but also provides extreme flexibility, as the ratio between slurry-feeder speed and kiln speed may be altered from the firing floor simply by resetting the dial on a small rheostat on the instrument panel. It is even possible to lock this dial, if considered advisable, so that the ratio of slurry feed to kiln speed remains fixed at any given setting.

Concurrent with the modernization of the kiln room, improvements were being carried out throughout the plant generally to permit the company to keep up with the ever-increasing cement demand. Track and locomotive haulage was replaced by trucks, new drilling and blasting techniques were introduced in the quarries, and stone-storage facilities were enlarged. Facilities on the waterfront, too, were modernized. Two stiff-leg derricks with clamshell buckets replaced an old steam crane for handling coal, gypsum, and stone from Texada. A new Symons 4-ft. standard cone crusher and belt-conveyor system replaced an old crusher and elevator, and shipment of sacked cement by steamer to the mainland was replaced by a more economical system which employs pallets, power lift-trucks, and scows. Additional storerooms, machine shop facilities and a first-aid room were built. Throughout the plant, flat-belt drives were replaced by modern gear-reduction units, antifriction bearings replaced babbitt; and new motors were installed throughout.

As a result of these improvements, the plant in 1950 was not only taking on a modern, efficient appearance, but had increased in capacity from 750,000 to 1,300,000 bbl. per year. Still the growing demand for cement could not be satisfied, and the management decided that a major expansion must be made. The keynote of this newest program was the addition of a new 10- by 11½- by 350-ft. kiln to increase clinker production by by 900,000 bbl. annually, a new crushing plant, a modern clinker-storage and clinker-crushing system, and enlarged slurry-blending and storage facilities. These went into service in November, 1952.

Several quarry faces have been and are being worked behind the Bamberton plant. At present a 150-ft. face is being operated as the chief source of local rock, and drilling is done by a Bucyrus-Erie 27T blast-hole drill with a 6⅝-in. bit, vertical holes having 20-ft. burden and 25-ft. spacing. Millisecond-delay blasting is practiced, holes being loaded with 6- by 16-in. Forcite gelatin cartridges. An average shot brings down 60,000 tons with good fragmentation which requires practically no secondary shooting. A Bucyrus-Erie 1½-cu. yd. electric shovel does much of the loading, three Koehring Dumptors hauling to the new primary crusher from the No. 1 quarry floor. Euclid end-dumpers bring in the stone from the other quarries. The Euclids discharge to the crusher from a considerably higher level through a glory hole.

Neither shale nor clay is used; a "green" stone deposit occurring nearby supplies the argillaceous raw material. For the most part, the Bamberton quarries yield a low-lime rock, a fact which prompted the company back in the '20's to open the quarry on Texada Island's Blubber Bay. These workings continue to supply about half the raw-material requirements, the high-calcium stone (about 97 percent $CaCO_3$) being loaded on scows and towed by tug more than 90 miles to the plant. The Blubber Bay stone is reduced to minus 6-in. by a Dominion 36- by 48-in. jaw crusher before being transported across the water.

The original crushing plant at Bamberton was close to the plant proper. The main quarry had advanced into the hillside some 1,000 ft. over the years, however; so the

This view of the new clinker-storage building was taken just prior to its completion. An extensive conveyor system eliminated the need for elevators, despite the hillside location.

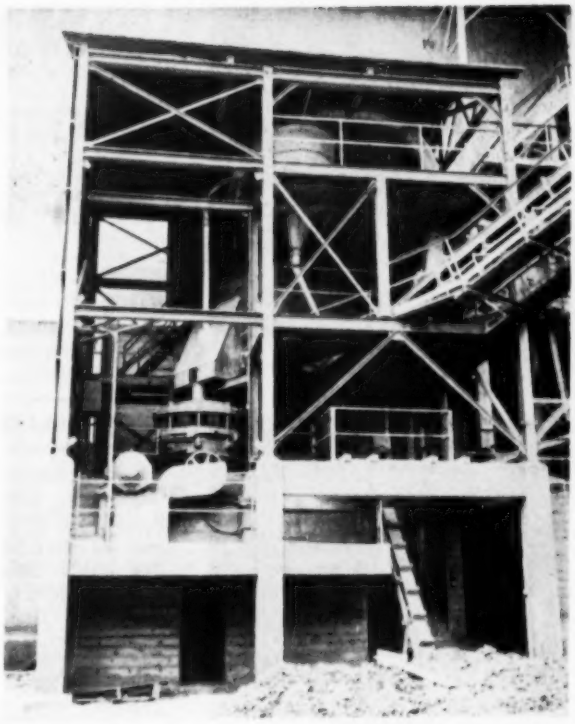
new crushing plant was installed much closer to the present face in order to reduce hauling. The plant consists of a 5- by 12-ft. Stephens-Adamson manganese pan-feeder ahead of a Buchanan 42- by 48-in. primary jaw crusher, which discharges a 5-in. product to a 30-in. belt. The belt conveys to a Dillon 4- by 10-ft. vibrating screen through which the fines drop to a long conveyor leading directly to the raw-mill bins. A short conveyor carries the screen oversize to a Symons 5½-ft. cone crusher producing a 1½-in. top-size material which joins the screen throughs on the belt to the raw-grinding department. At the discharge end of the belt, immediately above the raw-mill bins, a Symons 4-ft. short-head cone crusher in closed circuit with a Dillon 5- by 12-ft. screen produces the minus ⅜-in. product utilized as feed to the raw ball mills.

The system was designed to yield a very fine product in the hope that raw-grinding capacity would thereby be increased. This was an important consideration because, even though the remaining three of the five tube mills had been converted from 160- to 300-hp. drives, raw-grinding capacity was nevertheless somewhat short of requirements with the new 350-ft. kiln in operation. Since no space was available to install extra mills, emphasis was placed on finer feed. Experience has now justified this decision as output on the raw side has been increased 20 percent by this means. Likewise, the maximum ball size has been reduced from 4 to 3 in. with a consequent saving in wear on the liners.

Three new 40- by 40-ft. slurry tanks were built and equipped with Dorr agitators, and six Wilfley pumps were installed in two new pump-houses for mixing, blending, and pumping to the kilns. These new pumps replaced old plunger-type units from the original installation. The three new agitator tanks, together with the four older tanks, now contain slurry sufficient to feed the kilns for five or six days.

The new 10- by 350-ft. kiln, enlarged to 11½ ft. for 65 ft. of its length in the burning zone, was supplied by Vickers-Armstrong and shipped by water from England to Bamberton in 11 sections with welded shop joints. It was installed by plant forces, using riveted field joints, alongside the three old kilns on a common firing floor. There are six riding rings with self-aligning water-cooled, oil-lubricated journals. It is driven at a top speed of 86 r.p.h. by a 150-hp. induction motor. The kiln discharges to a Fuller No. 644 grate-type cooler. Because of the location on a hillside, it was possible to install the kiln, cooler, and clinker-storage building at successively lower levels, eliminating the necessity of placing the

(*Continued on page* 120)



**Along the clinker-storage building is seen the new clinker-crushing installation, which reduces the size of feed to the finish-grinding department.**

**This view in the mill building shows the 6- by 15-ft. finish ball-mills.**

**The bagged product is palleted and handled with dispatch by industrial fork-lift trucks.**

# N.S.G.A. Directors Combine Recreation And Business Affairs

Mr. and Mrs. Albert R. Shiely (J. L. Shiely Company, St. Paul, Minn.).

Left to right: Edward F. Brovelli (Basalt Rock Company, Inc., Napa, Calif.), E. Alvin Goodman Jr. (B. V. Hedrick Gravel and Sand Company, Lilesville, N.C.), and J. Rutledge Hill (Gifford-Hill and Company, Inc., Dallas, Tex.).

Frank P. Spratlen Jr. (Ready Mixed Concrete Company, Denver, Colo.) and George W. Renwick (Chicago Gravel Company, Chicago).

Mr. and Mrs. Fred Bellamy (Concrete Materials Company, Waterloo, Iowa) and daughter Linda.

another ON THE SPOT report

THE mid-year meeting of the board of directors of the National Sand and Gravel Association was held September 28 to 30, 1953, at

**By WALTER E. TRAUFFER**

The Broadmoor, Colorado Springs, Colo. The board of the National Ready Mixed Concrete Association met at the same time. The first day was devoted to a joint meeting, the second to individual meetings, and the third to whatever activities each individual preferred. This arrangement met with universal approval. The meetings were well attended, with 56 directors present from both groups. Most of them brought their wives, and some also other members of their families. Much important business was transacted which will affect the future of the entire sand-and-gravel industry.

Ample time was provided and arrangements were made so that everyone could avail himself of the unrivalled facilities for entertainment of various kinds provided by this outstanding resort and the surrounding Rocky Mountain area. This included various tours, as well as visits to plants. On two nights cocktail parties were held and on the second night there was a steak fry on Cheyenne Mountain.

**President's Address** The meeting was opened with a brief address by President Albert R. Shiely (J. L. Shiely Company, St. Paul, Minn.) in which he blended information on important developments affecting this industry with his well-known brand of humor. He briefly reviewed the latest developments with respect to price control, labor, zoning, water pollution, radio, railroad rates, safety, research, group insurance, etc. In discussing problems facing the industry Mr. Shiely said that everything possible should be done to prevent the Administration from giving in to labor on the Taft-Hartley Law, that unceasing effort must be devoted to percentage depletion, and that more member companies must be interested in safety. He also said members must work for a revision of the tax structure, as it is now cheaper to repair old equipment than to buy new. These efforts he urged, should be concentrated on, even at the expense of other aims. In closing, Mr. Shiely expressed his gratitude for the excellent co-operation received from the association membership and staff and their unqualified support in various undertakings. The association, he said, is in excellent financial condition and is looking forward to its largest and most successful annual convention. The membership is at an all-time high, due to the addition of 15 new active and 7 new associate members since the annual convention in San Francisco.

Details of the retirement plan for the staff of the associations were given by Howard W. Jordan (Metropolitan Sand & Gravel Co., Port Washington, N. Y.) This plan, which has been adopted by both associations, also has extra insurance features if these are desired.

**Convention Plans** At the joint meeting of both boards considerable time was devoted to the discussion of plans for the coming joint conventions and machinery exhibition to be held at the Conrad Hilton Hotel, Chicago, February 15-19, 1954. Vincent P. Ahearn, executive secretary, briefly described the program which is now almost completed and which will apparently maintain the high standards set in previous years. All of the subjects most important to producers will be covered, and ample time will be devoted to discussions of operating problems. Monday, February 15, will be given over to meetings of the board of directors. The next three days convention meetings will be held, probably including three simultaneous sessions. The convention will close Friday noon.

Mr. Ahearn stated that the machinery exhibition will be open during the meetings, and everything possible will be done to induce producers to visit the exhibits. In spite

of the enlarged exhibit facilities available this year the space may be oversold, and some of the larger exhibitors may be asked to limit their amount of space. There will be no manufacturers' reception, but there will be hospitality hours in a special room each evening, a practice inaugurated at the San Francisco convention which worked out very well.

The 1954 mid-year meetings of the two boards of directors are to be held at the Manoir Richelieu, one of Canada's great hotel resorts, at Murray Bay, Quebec, during the third week in August. Several other possible locations were also discussed, but this was the unanimous choice.

The 1955 annual convention will be held January 9-13 at Miami, Fla., where ample facilities are now available to handle such a large group. The boards also voted to go back to the Conrad Hilton in Chicago for the 1956 annual convention.

There was considerable discussion about possible locations for the 1957 annual convention. Robert Mitchell, representing the Los Angeles members and California associations, invited the association to hold the convention in Los Angeles, and it was voted to do so. He promised ample hotel facilities.

There seems to be a growing feeling in favor of an outside show, and the Coliseum in Chicago and the Public Auditorium in Cleveland were mentioned as possible future locations. Many manufacturers would like to exhibit larger machinery, which the present limited space does not permit.

**Federal Legislation** In discussing federal legislation affecting the two industries Mr. Ahearn expressed the belief that the excess profits tax will end with this year, but he expects no change in the corporate tax rate. Some form of general revenue taxation is possible. Percentage depletion, he said, will again be under attack, and there is serious opposition to Federal Aid for highways. A committee was appointed to study the Federal Aid situation and recommend a policy for the association. A heartening sign, said Mr. Ahearn, was the failure of the attack on the Taft-Hartley Law and the conservative attitude of Congress toward any changes in it. With respect to the recent F.T.C. delivered price decision, he believes that any manufacturer may now safely meet his competitors' delivered prices. It is doubtful, however, if Congress will pass a law on this issue.

With regard to industry questions before executive departments of government, Mr. Ahearn said that clarification of jurisdiction of the Wage and Hour Law is near. There is also a possibility that the extension of the use of industrial radio to the sand-and-gravel and ready-mixed-concrete industries is not far off. For information on application of the 3 percent tax on transportation he referred back to a detailed report sent to members recently. Producers are advised to stamp their checks to owner-drivers with the statement that the sum includes the 3 percent tax. This procedure relieves the producer of any responsibility.

**Percentage Depletion** A report on the present status of percentage depletion for the sand-and-gravel industry was given by J. Rutledge Hill (Gifford-Hill & Company, Inc., Dallas, Tex.). He again emphasized that producers must keep working on percentage depletion all the time, not only to get it increased over the low 5 percent rating it now has, but also to combat continuing efforts to abolish it entirely. It is expected that pressure will be brought on the next Congress to eliminate those industries which were recently granted percentage depletion and to reduce the allowance of those which had already had it.

According to Mr. Hill, the new percentage depletion regulations contain no major changes for most producers, and a more detailed explanation of ordinary treatment processes is expected soon from the Internal Revenue Service. Mr. Ahearn urged all sand-and-gravel producers to let the association know when any I.R.S. agent disallows allowances that they have taken. Robert Mitchell (Consolidated Rock Products Company, Los Angeles, Calif.) said that producers in that state are allowed to apply percentage depletion to their state income tax in the same amount —5 percent for the sand-and-gravel industry. Mr. Ahearn pointed out that in Massachusetts, Delaware, New York, and other states having income taxes producers are automatically permitted to apply these deductions.

**Strikes in 1953** The strike problem in 1953 had an important place on the program, and several producers told of their experiences. Several important areas had more prolonged strikes than any previously experienced in these industries. Herbert Jahncke, (Jahncke Service, Inc., New Orleans) described the first prolonged strike in these industries in that city, which lasted from July

Mr. and Mrs. C. A. Barinowski (Birmingham Slag Company, Birmingham, Ala.).

Mr. and Mrs. Emory M. Heuston (Bucyrus-Erie Company, South Milwaukee, Wis.).

Mr. and Mrs. Norman J. Fredericks (Koenig Coal and Supply Company, Detroit, Mich.).

Mrs. Morgan R. Butler (Butler Bin Company, Waukesha, Wis.) and Mrs. Ralph Johnson (Simplicity Engineering Company, Durand, Mich.).

Charles W. Shirey (C. W. Shirey Company, Waterloo, Iowa) and George R. Krom (Windsor Building Supplies Company, Newburgh, N.Y.).

1 to August 17. The teamsters union made exorbitant demands, asking for a large increase in wages, vacations with pay up to 4 weeks after 10 years' service, etc. All the ready-mix plants stood together. The Federal Mediation Service was first called in, with no result. The companies finally got an injunction to prevent picketing and invited their workers back, sending each man a special delivery letter. This ended the strike, and the union settled for a 10-cents-per-hour increase. Mr. Jahncke feels that in this instance the producers took the proper and most effective steps.

Howard W. Jordan (Metropolitan Sand & Gravel Company, Port Washington, N. Y.) told of the 6-week strike in the metropolitan area of New York, which put 125,000 building tradesmen out of work. The strikers were offered a 30-cents-per-hour increase, which was refused. Finally some of the smaller producers in the area signed for an increase of 50 cents per hour and increases of from 3 to 5 percent in fringe benefits. The entire issue is now in process of arbitration. This strike, which ended September 19, is estimated to have cost each worker about $1,000.

Mr. Ahearn told of the teamsters' strike in Kansas City which lasted from May 11 to July 21. An increase of 25 cents per hour and other benefits was demanded. The final settlement was for a 12½-cent increase and no other benefits. A similar strike in St. Louis lasted from May 19 to August 12 and affected 35 producing companies. This resulted in an increase of 22 cents per hour—15 cents retroactive to May 1, and 7 cents due next May 1—more paid vacations, and increases in other benefits. According to Mr. Ahearn, there are more strikes ahead for these industries, and producers can win only if they stick together. The reciprocal lockout can and must be used where it is helpful, but it is not applicable in all cases. He pointed out that in the above strikes only part of the producers in the affected areas were association members, but the non-members followed the lead of the members.

**Engineering Report** Before the joint meeting of the two boards Stanton Walker, engineering director of N.S.G.A. and N.R.M.C.A., reported on matters of interest to both associations. At the associations' laboratory at the University of Maryland the sand-and-gravel fellow has been doing research on bituminous mixtures, but he will soon join the armed forces and cannot be replaced. The staff program will be expanded to carry on this work. The ready-mixed-concrete fellow is working on the relationship between the thermal properties and the durability of concrete and its ingredients.

Mr. Walker said that inevitably a growing percentage of the research work being done is for individual member companies but that most of this is also of interest to other members. Advance registrations for the Short Course already exceed capacity. He also said that many of the association publications for either industry are really of interest to both and will in the future be regarded as joint releases.

The proposed Short Course at the University of Maryland on the use of sand and gravel in bituminous mixtures, said Mr. Walker, will be patterned after the present Concrete Short Course. He also pointed out the little attention which has been given in recent years to the subject of railway ballast. He described a new process which uses uncrushed gravel and a coarse sand filler to make an excellent ballast. The ballast market is there, he emphasized, if the sand-and-gravel industry will go after it, but even crushed gravel is not being pushed as much as it could be.

His department, Mr. Walker stated, has two major publications in mind. One of these, to be ready soon, will deal with the proportioning of concrete from the aggregates slant and will be patterned after the one prepared for N.R.M.C.A. members.

**Group Insurance** Mr. Ahearn reported at the joint meeting on the status of the group insurance plan of the two associations and its present financial condition. He said that 669 employees and 350 dependents are now covered

Charles E. Marshall and Thomas E. Popplewell, both of the Fort Worth Sand & Gravel Company, Fort Worth, Tex.

by the plan and that the number is growing steadily. He pointed out that many of those covered are white collar workers and that the plan can be adjusted to fit almost any conditions. He urged all members to study the plan carefully as it has advantages not offered by other plans.

**Business Outlook** Various board members in both industries reported on the business outlook for the balance of 1953 and for 1954 in their respective areas or states. Following are brief summaries of their reports, beginning on the East Coast and proceeding westward. As Stanton Walker put it, these reports average better than fair but somewhat less than good.

*Massachusetts* — Due to the New York State Freeway construction, business in its vicinity is expected to be good into 1955. In other areas business is now about the same as 1952, and 1954 is expected to be off 10 to 15 percent.

*Maryland* — Home construction is down, but commercial and public building is up. As a result, business in 1953 is about the same as 1952, and no change is expected at least in the first half of 1954.

*Virginia* — Good business is expected to hold up if the government will release some of its backlog of planned construction.

*Florida* — Business in the southern part of the state is ahead of 1952, and 1954 is expected to be at least as good.

*Pennsylvania* — The three-year boom in the eastern part of the state due to large projects is nearly over. Actually, 1953 business is ahead of 1952, when there were strikes and cement shortages. Early 1954 is expected to be up, with a falling off later. In the western part of the state both 1952 and 1953 were down from the peak year of 1951, and

(*Continued on page* 98)

# PROGRESS SIGNPOSTS
## In Expanded Shale Plant Operation

By WOLF G. BAUER
Consulting Engineer

### THE AGE OF GLASS

another P-D exclusive

A signpost may point out direction and perhaps the best route to an objective, but it does not guarantee arrival at the indicated destination. In industry and engineering we may come across an innovation or a newly applied principle that has shown promise of doing a better job than a former process, technique, or piece of equipment. If a possibility exists that the new unit or technique might be applied to other conditions or processes, then a signpost has been established from which progress in a new direction may be charted.

After World War II, when the expanded-shale industry witnessed such a remarkable growing spurt, and when many new plants and often inexperienced operators began to augment the rather limited industry operating at that time, we wrote a series of articles on the mechanics, techniques, and economics of expanded-clay-shale aggregate production to aid the growing list of producers. Judging by the requests for copies of these articles, it may be of value to bring some of the topics treated in these discussions up to date in the light of progressive practices and thinking.

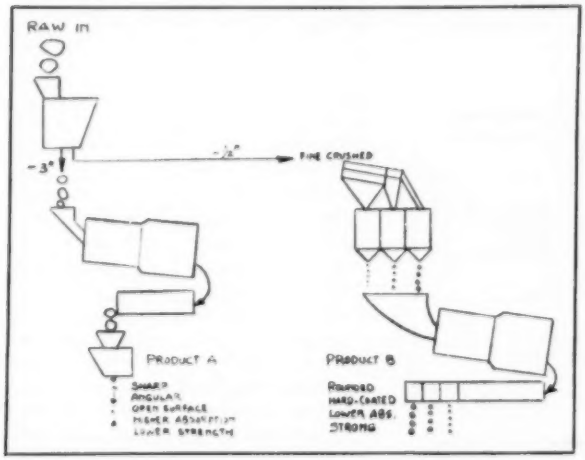
Testing and commercial experience and research with numerous clays and shales from many local and foreign localities have shown this writer the wide variations in firing and processing behavior upon which plant and process equipment design depend in such large measure. There are some operations in which the shale expands easily over a wide temperature range without undue sticking and balling problems, without need for great firing control and care, and where, with the availability of cheap fuel, the crudest type of plant satisfies a waiting market. However, the universal need for a dependable source of lightweight aggregate grows each year, and many new plants are saddled with more sensitive raw materials, high fuel and labor costs, and a market that is either highly competitive, or yet to be developed. Such challenging conditions are often responsible for technical progress which helps to advance the processing art of the industry as a whole.

Certainly the industry is at a threshold. What we have witnessed and what we have accomplished is very little in comparison with what will be done product-wise and market-wise in the early future. The expanded-clay-shale industry is fundamentally a structural glass industry, an important new contributor to our "Age of Glass". Ceramic engineers and structural engineers will be more and more concerned with the toughness, composition, stability, and membrane strength of pore walls; with the refractoriness, absorption, expansion, hardness, abrasion resistance, and exterior shape and surface roughness of these porous glass particles destined to become such a valuable building material. As such, they replace various crushed rock and gravels which are often of lower stability, lower refractoriness, lower uniformity, greater heat conductivity and which always have greater weight-to-strength ratios. As the concrete block market is slowly being saturated with the lightweight aggregate as it becomes available, this porous glass material in various forms and grades is finding increasing uses and acceptance in ready-mixed concrete, deckings, floors, roofs, dairy barns, roads, tilt-up slabs, prestressed beams and prefab concrete units, ceramic and gypsum tile, and insulating fillers and sands in numerous fields.

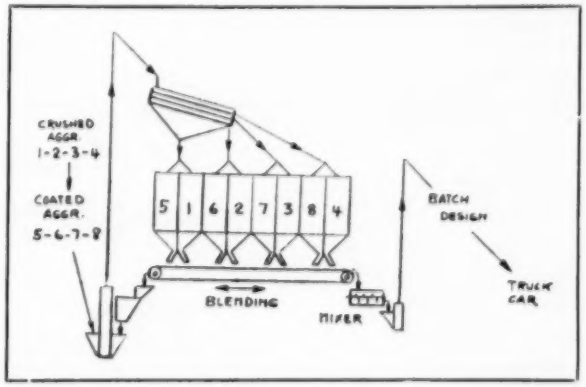
Naturally this diversification will demand new concepts of plant flexibility and product design and control. Without appearing at all visionary or premature, let us sketch the outlines of the modern lightweight clay-shale-expansion plant of today and discuss some of the ways in which the present plants can keep abreast of modern thought and practice.

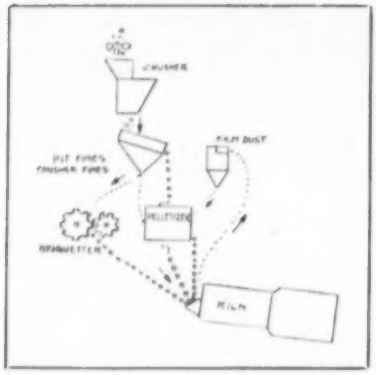
### ELEMENTS OF THE MODERN PLANT

In lightweight aggregate production, the sintering machine plant fills a definite place, particularly where the raw material is not a natural expander and where low volatile solid fuel is readily available. However, some experience in the field indicates that rotary kilns may under some conditions produce a more uniform product with somewhat closer glass and pore structure control.




Product design for either sharp-edged, crushed, or smooth-coated aggregate. Left, first stage; right, second stage.






Material conservation calls for the utilization of fines from pit operation and raw crushing and dust from kiln waste gases.

Clay-expansion plants and their process equipment and techniques vary considerably from those which process a hard shale raw material. However, it is well within modern engineering know-how to build or rebuild a plant to meet the following nine requirements:

1. **Product design**—To produce crushed, sharp-edged, rough-surfaced lightweight aggregate of any size and particle-size distribution one day, and a low absorption, smooth, rounded, steel-hard coated aggregate the next day with the same process equipment.

2. **Material conservation**—To utilize any and all fines from the clay or shale pit operation, raw crushing, and most of the dust from the kiln waste gases for nearly 100 percent raw material usage.

3. **Fuel economy**—To lower the heat requirement below 2,000,000 B.t.u.'s per cubic yard of standard weight lightweight aggregate, except in cases of extremely wet plastic clays.

4. **Smooth pyro-processing**—To operate with minimum balling, sticking, and scaling conditions in the new type of kilns with any fuel cheaply available.

5. **Five-day-week operation**—To operate the kiln plant on a modern five-day-week basis without excessive fuel waste or harm to kiln or refractories.

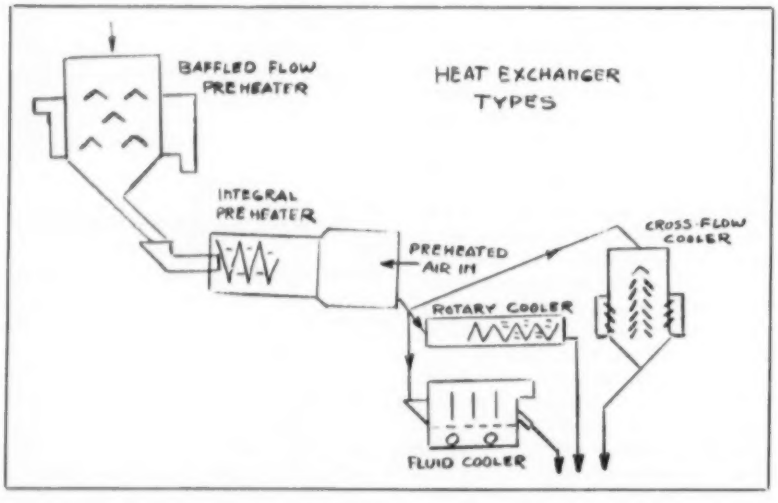
6. **Particle-density classification**—To accomplish a mechanical continuous sink-float separation of clinker particles which would also represent an indirect control of aggregate strength regulation, and furnish water or vapor for any necessary clinker stabilizing by lime hydration.

7. **Dust recovery**—To operate a dustless plant in which any recovered dust may be used and appear in the final products.

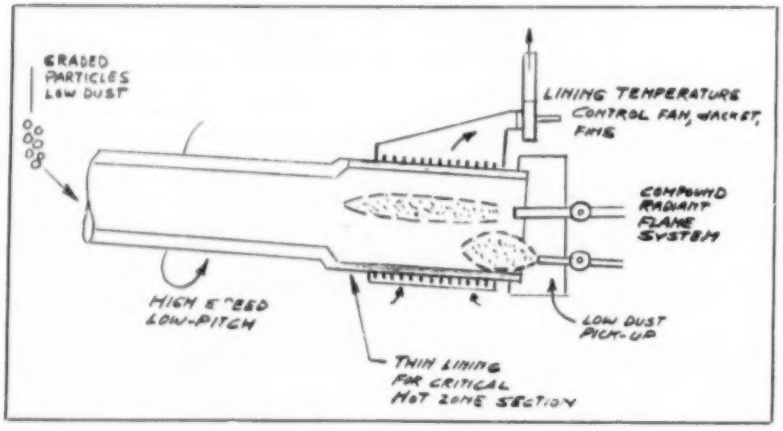
8. **Labor economy**—To mechanize the operation with special equipment which can make it possible under very favorable conditions for a one-man shift to take care of all quarrying, material reduction, and transport ready for kiln feeding, while in other locations under unfavorable circumstances at least three-man shifts are required.

9. **Multi-use plant potential**—To design the plant for other similar processing uses in mind which would require minimum changes and additions to convert to lime burning, production of masonry cements, calcining of fire clay for brick plants, calcining of gypsum and other minerals, and activating of shales and clays for pozzolanic cement additives.

Naturally there are quite a number of additional items which contribute to the modern make-up of the flexible plant of today. Let us look now at these aforementioned elements of the modern plant in more detail. Complete plants incorporating most of these proven features adjusted to local conditions are available today, as are also individual process units for step-by-step plant improvements.




Above: How fuel economy can be achieved through the use of heat exchangers. Below: For smooth pyro-processing in the rotary kiln, the conditions shown here should obtain.


GRADED PARTICLES LOW DUST
LINING TEMPERATURE CONTROL FAN, JACKET, FINE
COMPOUND RADIANT FLAME SYSTEM
HIGH SPEED LOW-PITCH
LOW DUST PICK-UP
THIN LINING FOR CRITICAL HOT ZONE SECTION

**Product Design** According to many who have used and tested carefully processed and sized hardcoated expanded-clay-shale aggregate, this type aggregate is noted for its high strength, low absorption, easy workability, and high stability; and it can be substituted for heavy stone aggregate where low weight, low heat and sound transmission, and steel savings in re-enforced or prestressed concrete is required. That this market is hardly developed may be due primarily to a reluctance by present producers to think in terms of other than concrete block materials, especially as it takes considerable time and patience in promoting and sell-

ing. Thus the sintering machine and the standard Haydite type kiln process have not been conducive toward developing this usage in such fields to any great extent, since the product of both is generally a sharp-edged, open-structure material.

Naturally, feed sizing alone does not necessarily produce an equivalent-sized hard-coated material on an expanded scale or volume. For such alternate kiln feeding, certain basic kiln burner and operating changes are required.

The design of the final products in the modern plant may begin in the quarry with selective quarrying of clays and shales to produce lower- or higher-density or strength material, which can be sold separately for concrete aggregate uses where such special properties are of importance. Further product design may be practiced in the pre-burning phase to prepare the material for kiln feed. This control is tied up with such process phases as mixing, pugging, wetting, pelletizing, briquetting, crushing and screening, additive blending, etc. Of course, a large measure of control is exercised in the kiln operation, and the time-temperature profile established and controlled for various expansion results represents an important product design feature of the modern plant with a flexible kiln system for product diversification.

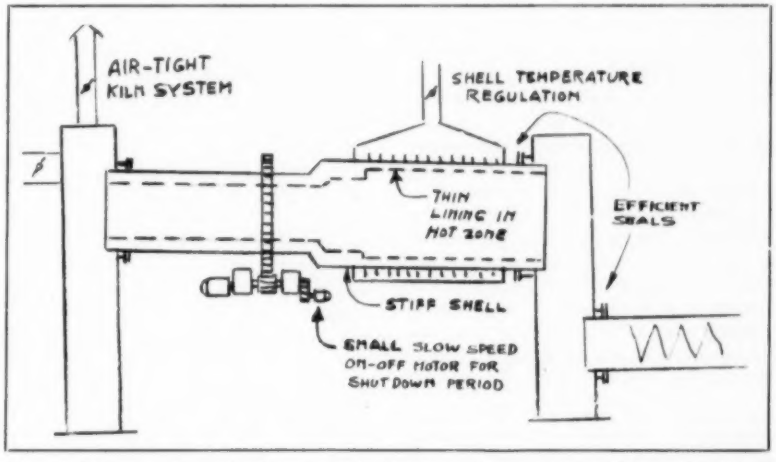
Final product design to fit many of the newer specifications and uses is accomplished by the crushing and screening, and particularly by the particle size distribution control with blending bins. While many producers crush in closed circuit with a screen to produce an acceptable block aggregate, modern flexibility may often demand screening size fractions into partitioned bins and then recombining through high-capacity discharge feeder control direct to rail car or truck.

**Material Conservation** It is desirable that the plant be designed for minimum waste not only for conservation and depletion reasons, but also to hold quarry and plant production costs to the minimum. While some operations may quarry, transport, crush, and screen a friable shale, and then remove 25 percent of the fines produced in the process in order to raise kiln capacity and minimize detrimental dust conditions in the kiln, these fines may well be pelletized or briquetted for additional kiln feed. Such a separate raw feed of compacted raw shale fines may constitute a new product if expanded by itself, and because of the compacting system will allow any other collected dust to be incorporated and returned to the system *via* wet or moist pellets. The extra plant output so gained by screening shale fines out of the kiln feed from a crushing operation should more than pay for the pelletizing or briquetting system needed.

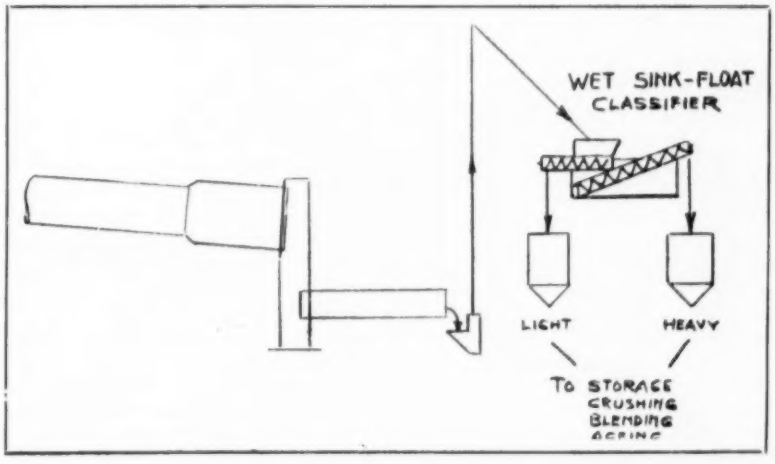
**Fuel Economy** The modern kiln plant is designed for low fuel consumption as a foregone conclusion, and is able to capitalize on any low-cost fuel available in its area. While it is certainly economical and practical in most cases to operate below 2,000,000 B.t.u.'s per cubic yard of normal aggregate, the expansion ratio does, of course, affect this heat requirement based on product volume.

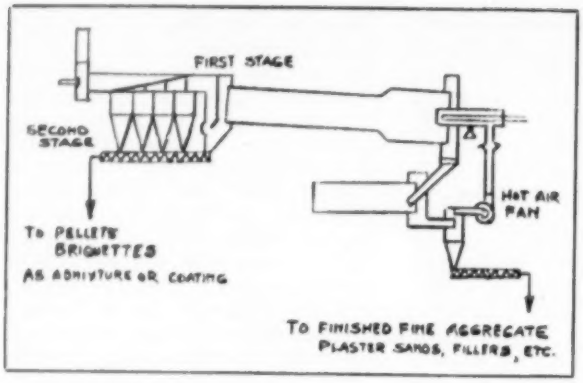
In earlier articles we discussed the economic balance to which every operation is inherently tied, namely, the limits in additional power, maintenance, insulation material, and equipment cost beyond which no further heat savings are practical. Only generalities can be made here. Often an extra kiln boost may be obtained through changes in processing technique, such as intensity and location of heat release from flames; changes in time-temperature relationship as a function of kiln speed, bed depth, and flame length; and further betterment in minimizing downtime and production loss due to ring, balling, and scale formation. Such a production increase may be accompanied by a higher relative fuel consumption, yet be entirely justified from the standpoint of overall economics. Thus, while fuel efficiency is important and can be boosted by better control of combustion variables, air leakages, dust, and inefficient recuperative cooling, overall plant production efficiency is the final goal.

With fairly close-sized strong shale as raw kiln feed, the writer has used vertical bin-type dryer-preheaters with good results. The modern new plant is, of course, designed with a kiln system in which integral preheaters and separate recuperative coolers are in use as a matter of

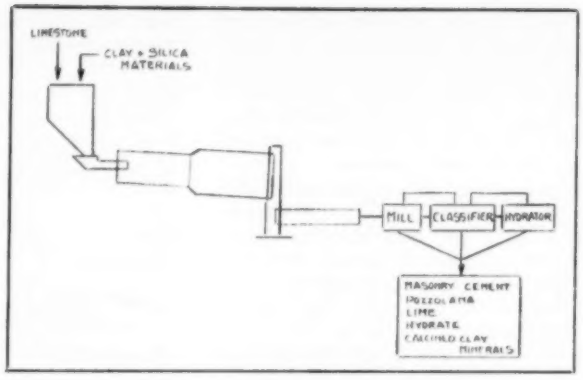

AIR-TIGHT KILN SYSTEM
SHELL TEMPERATURE REGULATION
THIN LINING IN HOT ZONE
EFFICIENT SEALS
STIFF SHELL
SMALL SLOW SPEED ON-OFF MOTOR FOR SHUT DOWN PERIOD

Above: Prime requirements for practical five-day-week operations. Below: Conditions necessary for accomplishing particle-density classification.






A suggested system for insuring dustless operation and utilization of recovered dust.




Desirable plan for plant adapted to other similar processing uses.

economy, only their degree of refinement being a matter determined by the economic balance. Since expansion of most shales is in the low-temperature range as far as kilns are concerned, and many of these clays and shales contain considerable moisture to depress the exhaust gas temperature in the upper end of the kiln, a good deal can be accomplished with low-cost heat exchangers for that reason. This is particularly attractive in view of the fact that most kilns are designed too short for flexible efficient operation; and thus these heat transfer elements and built-in preheaters have the effect of lengthening the kiln at lower radiation losses. Commercial experience and tests have shown that separate cross-bed baffled flow bin preheaters, spiral gas flow kiln and cooler heat exchange elements, cross-flow through-bed bin recuperating coolers, and fluidized bed fines coolers may all be employed to increase output and to lower fuel consumption.

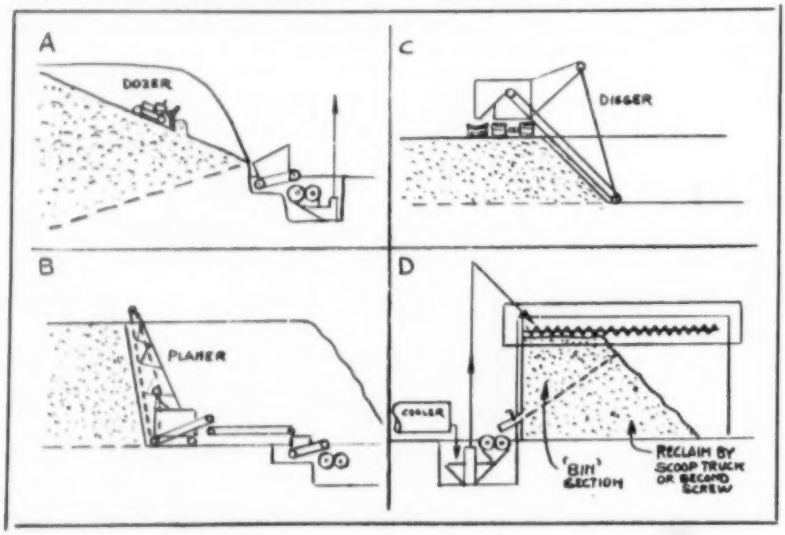
How special equipment may effect labor economy in the expanded-clay operation.

**Smooth Pyro-Processing** Numerous dissertations on rotary kiln pyro-processing have been presented by the writer and others in PIT AND QUARRY, and the reader is referred particularly to those dealing with controlled heat conductance through the hot zone lining, the compound diffusion flame system, and the factors which tend to reduce the formation of balling and slag growth on the lining.

A series of carefully conducted laboratory rotary kiln tests may reveal the extent to which time may be substituted for temperature in expanding or bloating materials which tend to surface-flux and conglomerate too readily. For these, often the addition of 10 minutes in the bloating zone, coupled with a reduction of 50 to 100 deg. F., the use of low-temperature flames, open type bed of graded raw material with minimum fines, and cooled hot zone lining will prove corrective. The modern plant, therefore, has kilns designed not only for a certain capacity, but also to suit the thermal behavior of each material. This design includes minimum dust pick-up in the cooler, controlled drying time to prevent steam spalling and decrepitation in the preheating zone, rapid bed rolling in conjunction with controlled heat release at bed surface to prevent surface fluxing tendencies at slow kiln rotation, and finally proper indicating and recording instruments to observe and control process variables in ample time for corrections.

The modern plant is not particularly distinguished by its great array of instruments and controllers, but rather by the full use of a few strategically located sensing elements relaying those temperature, pressure, and flow conditions which can be varied positively to directly control the process and product. Teamwork, as well as standardized training and report keeping and operation by an intelligent firing crew, is a prerequisite for top results.

The modern control board has the control lever or wheel directly below or next to each corresponding indicator or recorder. Secondary air flow should be accurately indicated and regulated with each change in fuel flow, and all gauges must therefore operate in their most sensitive range. Recorders should be used not only as analytical records and checks on firemen's performance, but they should be recognized as drift and trend indicators by the operator for minimizing the "oversteering" of the kiln. Modern kilns are not dependent on natural stack draft but on positive draft fans for dust collection purposes and steady high capacity performance. The system is furthermore arranged to give the firemen ready access to the raw feed control on the firing floor, and the means for quick checks on both the feed quality and kiln output tonnage or yardage.




**Five-Day-Week Operation** The operation of rotary kiln plants on a continuous seven-day week schedule is universal.

While the office, quarry, superintendence, shop, sales, loading, and shipping and other day shift operations and departments operate on a five-day weekly system of 40 or 44 hours, the kiln or firing department is forced to continue full operation. The attendant personnel problems, split shifts, wage distribution, supervision, and extra surge capacities needed at either end of the kiln system are familiar to all, and need not be detailed here. While extra plant capacity is obtained thereby, and while in the case of large kiln plants in the lime, cement, refractory, and other high-temperature industries the plant is designed to operate smoothly on such a basis, yet the possibility for designing a five-day kiln operation in the expanded clay-shale industry are particularly favorable and often attractive and desirable.

As one with a technical background in ceramic engineering with practical experience with rotary kilns in many industries under extreme ranges of operating, start-up, and shut-down conditions and with all sizes of pilot and test kilns, this writer is convinced that the modern expanded-clay-shale plant can be and should be designed to operate on a five-day-week schedule whenever desirable.

The operator will think of a number of problems associated with such intermittent operation — radiation and conduction losses of stored-up heat in the kiln lining, shell, and load; some slight loss due to offgrade material after starting up; and, most serious of all, repeated expansion and contraction stresses which may cause spalling of the lining, loosening, and shell warpage. Serious as all these conditions appear to be, the fact remains that in this industry these can be eliminated or be minimized to the point where the five-day week can become an attractive reality.

There is a good deal of evidence in practical results and test data to support this contention, not so much in direct application as in the contributing information and experience gained in checking kilns under much more severe conditions of start and stop. This article is not centered on this interesting topic as it awaits further experience, and will therefore be treated in a later article in PIT AND QUARRY. Suffice it here to point out that a combination of several contributing factors will make the five-day-week schedule of operation successful. These factors are the judicious use of some of our best spalling-resistant refractory materials, the use of a 4½-in. hot zone lining made of 9-in. arch brick to obtain many small units with or without insulated backing, a first-class placing and keying job, a stiff re-enforced shell in the critical section, a smooth-turning vibrationless kiln, a jacketed and finned shell temperature control cooling-heating section around the hot zone shell area, air-tight hoods and positive air and gas flow control and stoppage through the kiln system after shutdown, and use of a small auxiliary kiln drive motor on a time cycle switch to turn the kiln periodically at extremely slow speed during shutdown. Under these conditions the week-end or night watchman would be the only one attending a large plant if one is desired at all while the kiln system is "banked," so to speak, somewhat like a boiler. Thus can the modern kiln plant be designed in step with today's trend in the weekly work schedule under these lower processing temperature conditions of the industry.

**Particle Density Classification** Whether the modern plant employs a sink-float separator to classify the kiln and cooler discharge material or not is a question of product diversification and need. Certainly it should be called to the industry's attention that such a separator may readily be used. The use of water as an arbitrary but convenient separating medium assumes, of course, that a division along this density value of 1.0 is desirable. Many of today's expanded shales and clays happen to fall very close to either side of this density line under normal operating conditions and product specifications. Quick, momentary immersion in a suitable water trough separator with float skimmer and sink conveyor will provide fractions that may, because of such classification, enhance the specific properties of weight and strength to produce two superior products instead of one mixed aggregate of only passable and variable quality and limited use.

The separator can be designed for minimum particle immersion time, so that the sensible heat in the clinker will help to after-dry the wet surface films remaining. Slight moisture that may be controlled to remain for dust suppression in crushing and screening later, can be regulated by water or clinker temperature or immersion time. If the clinker goes to storage piles, any excess moisture is evaporated. If the shale should contain any lime carbonate which is subsequently calcined to quicklime in the kiln, this or added moisture can be made to hasten a slaking and stabilizing process while the clinker is aged in closed silos or tanks.

**Dust Recovery** Dust may or may not be a plant nuisance, a liability, an expense, a necessary evil, or even a public relations problem in some areas. The modern operation can be designed, however, not only to retain a clean and dustless appearance without involving excessive clean-up labor, but the dust can be made to re-enter the circuit and become a part of the finished products.

While dust production is unavoidable because of handling and conveying, attrition and rubbing of particles, and heat spalling within the kiln, much of it can be caught in dry cyclone collectors of efficient design. Operation between 700 deg. F. and 1,000 deg. F. requires special-steel- and abrasion-resistant and replaceable cyclone liners for the critical wearing surfaces. The writer has used easily-applied and easily-renewed hard cement coatings for such service where air-cooled and re-enforced corten steel was otherwise suitable as back-up. The kiln exhaust dust can be stored for later pelletizing or briquetting, or it can be added in the pelletizer or water mixer or as an anti-sticking coating on the pellets if they are used either in clay expansion or in reclaiming fine shale from the pit.

Dust entering the kiln from the cooler is more of a process nuisance in the hot zone, and as such must be minimized in order to retain suitable flame radiation and stability and to inhibit scale and plating effect on the hot lining. This dust, being mostly hard glass, is more abrasive than some of the kiln exhaust dust originating from the raw shale and clay. The new kiln-cooler system is therefore designed with ample breeching area to hold hot air velocity to the minimum, or with a hot air cyclone system if the burner design calls for clean hot secondary air around the burners proper. The cooler also is designed for minimum dusting. Dust escaping around the kiln and cooler seals is a sign of poor seal function and design. Kilns with inefficient seals or none pull in too much uncontrolled cold air into the lower section, and then lose hot air and gas mixed with dust in the pressure area around the seal or kiln top.

Last but not least, the modern plant is clean and neat to invite inspection by the product dealers and users, an important advertising medium often overlooked with this type of operation. Not only is the clean and dustless plant a credit and sales

medium to the product, but it will invariably attract and hold a higher level of operational personnel doing a better job in greater safety.

**Labor Economy** It has already been pointed out how the five-day week can affect labor cost and problems. In the schematic sketches three one-man pit and quarry systems for mining clay or shale are shown. In some plants, where the deposit lies adjacent or close to the plant, even the transport means can be handled by the shale or clay scraper operator; and while additional occasional help may be needed for shifting conveyors, etc., or for development work, such ideal local conditions would constitute the cheapest raw material supply system.

The dozer is fitted with a specially-designed ripper tooth, and does both the scraping and transporting at the same time. Since the dozer can work a fan-shaped area from a very steep to a level and even up-hill grade, the filling hopper need not be moved more than perhaps once a year, using a longer belt to the crusher after such shifting. The shale planer with caterpillar tracks can also work a deposit similarly, although its effective working area is smaller than that of dozer. On the other hand, the scraped material size is more uniform, and requires less crushing.

Another system not shown in the sketches is that of the dragline for soft clay, the action and deposit being worked similarly to that with the dozer. The up-scraping digger machine, so popular in the clay pits of Europe, does a similar job on low pit deposits, but generally works back and forth in a straight line, delivering even very sticky clays to either trucks or a belt which can be shifted periodically with the machine advance, and which in turn feeds to a cross or T-belt conveying to the loading station.

The next stage in modern labor-saving arrangements is that dealing with raw and expanded material storage in instances where such plant-area storage is a requirement. Here again the new plant can operate at considerable saving in personnel. The writer has designed and installed systems such as in "D," for example, where the open screw automatically builds out the clinker storage pile for excess and storage needs, but where the first immediate-use section under the screw is tapped as a bin, and the material can be fed to crusher without reclaiming labor. Since this section is always the first to be filled by new incoming material, a bin and elevator are unnecessary, reclaiming labor by scooptruck is necessary only for tapping the remaining pile for extra shipping needs. This system can also be arranged with a shielded return screw for reclaiming, thus feeding the excess outer pile back to the first section outlet under the "bin" pile. This system developed by the writer is much lower in first cost than a tunnel reclaiming conveyor setup, and is particularly suited to either expanded clinker or crushed lightweight aggregate storage and reclaiming because of the low bulk weight and ready flow character of the material.

**Multi-Use Plant Potential** Plant adaptability to other processes requiring heat treatment and sizing should be listed along with modern plant flexibility in respect to product specifications and grades. Thus the lightweight expanded clay-shale processing plant has all the essential equipment for pyro-processing limestone, certain gypsum and mineral calcining processes, fire-clay calcining, pozzolana activation, and masonry cement production. If the new plant is designed with these potential jobs in mind, little investment and few additions and changes would allow the expanded-shale or clay operator to produce these other building material products on an economical scale. Blending, grinding, and classifying equipment, and ample changeover storage represent the basic additives, while firing system alterations are of a minor nature.

The universal adaptability of the rotary kiln system is materially enhanced and the value and potential money-making ability of such plants and investment is heightened if designed with refractories, alloys, feeders, dust collection equipment, ample conveyor capacity for other size particle transport, a flexible firing system for more than one temperature level of operation, and if it has ample area layout and hook-up to allow later inclusion of further process units. It would be a logical and natural evolution in thinking and practice for small rotary kiln plant operators to consider wider market possibilities for more constant, year-round operation. This is also of special interest to developments in territories and foreign undeveloped localities and countries in starting various building material industries with the minimum investment.

## N.S.G.A. Directors

(*From page* 92)

prospects for 1954 are not good.

*Illinois*—In the Chicago area 1953 was a good year, and 1954 should be the same.

*Indiana*—Business in 1953 is about the same as in 1950; both these years are under the peaks set in 1951 and 1952.

*Missouri*—In the St. Louis area, in spite of a prolonged strike, business is about the same as 1952, and 1954 is expected to be good due to a large highway program.

*Louisiana*—1953 business is about the same as 1952, but 1954 is expected to be down.

*Texas*—Business in 1953 is over 1952, and no drop is expected in 1954, as much highway work is planned.

*Nebraska*—Business in Omaha is holding up, but other parts of the state are off.

*Colorado*—The ready-mix business has fallen off sharply since early in the year, and cement consumption is also down.

*New Mexico*—Business is down and will drop further in 1954 due to a decrease in home building.

*California*—In the northern part of the state home building is slowing down, but highways and schools are up; so little change is expected. In the southern area 1953 was a banner year, about 15 percent over 1952, and no change is expected in 1954. A big highway program has offset a drop in home building.

*Washington*—Home building is off, but military and public works construction are up. As a result the years 1952, 1953, and 1954 will be on the same level.

### New York Trap Rock Employees Stay Around for 1,000 Years

Floyd J. Buffington, vice-president in charge of operations for New York Trap Rock Corporation, disclosed at the company's eighth annual clambake that the corporation's 40-Year Club now numbers 21 members, with a combined record of service exceeding 1,000 years.

The Trap Rock Corporation official noted, too, that of the company's total production employees, 10 percent had been with the company more than 30 years and 43 percent more than 10 years.

### New Warehouse, Laboratory Built by Gouverneur Talc Co.

Expanding operations of the Gouverneur Talc Company have resulted in the construction of a new warehouse and a new laboratory adjacent to the existing talc grinding plant at Balmat, N. Y.

Citing "better business" and a bigger demand for talc from the paint and ceramics industries, Robert McClellan, company manager, said that the laboratory is expected to be completed within two weeks, and the warehouse soon thereafter.

General view of the Roncari plant, showing (left to right): the screening and storage building, the recrusher and secondary crushers, the stone surge silo, and the primary crusher.

# Prosperous Multiple Business

## *grows out of* Roncari family's venture

Secondary breakage of rock in the quarry is done by a drop ball handled by a ½-cu. yd. truck crane.

By WALTER E. TRAUFFER

Stone being loaded into one of two 6-cu. yd. haulage units by a 1½-cu. yd. shovel.

another ON THE SPOT report

THE Roncari Construction Co., Inc., of Windsor Locks, Conn., is a splendid example of what can be done by taking advantage of conditions during a period of expanding business. Starting as a small construction firm in 1941, the Roncari family now is an important factor in local construction circles and also operates a thriving ready-mixed concrete, crushed stone, sand-and-gravel, and concrete foundation business.

Angelo Roncari, treasurer of this company, with his brothers, Raymond and Albert, started the Roncari Construction Co. in 1941. In 1944, while Raymond and Albert were in the armed forces, the production of ready-mixed concrete was begun. The following year, when they returned from the war, the construction company was incorporated, and Concrete Service, Inc., was formed to take over the ready-mix

Angelo Roncari, treasurer and general superintendent of the firm, standing beside his radio-equipped car.

business. In 1947 Foundation Builders was formed. Four years later Materials Service, Inc., was formed to produce aggregates, and Maple Manor, Inc., to promote and build housing developments. The company also operates an aggregate-bituminizing plant.

In both the ready-mix and construction businesses the Roncaris often found it difficult to get enough aggregates to meet their needs. Their confidence in the future of this part of the country also made them anxious to participate in its growth and in large construction projects to be let. As a result they investigated various stone deposits and found a promising one exposed in an old railway cut in nearby East Granby. A well not far away showed good trap rock to a depth of at least 130 ft. On the strength of this showing about 100 tons of stone were shot out and a representative sample was sent to a testing laboratory. The report showed the trap rock to be hard and sound and to meet all specifications.

The firm of Bacon, Greene & Milroy was then called in to look over the deposit, and on their recommendation it was decided to build a 200-t.p.h. plant. The firm of Materials Service, Inc., was formed in July, 1951, and Bacon, Greene & Milroy was given a contract for the design of this plant and for all of the equipment. Construction of the plant was done by the Roncaris.

The new plant went into operation early in June, 1952. At the start only a 36- by 24-in. primary jaw crusher was available, which held the plant output down to 125 t.p.h. During the last winter, however, the 42- by 40-in. crusher for which the plant was designed was installed. This has increased the output to over 200 t.p.h. The plant has a side-hill layout which takes all possible advantage of contours for good head room with short conveyors.

The 60-acre deposit contains millions of tons of stone in the form of a hill. The plant is located on the side of the hill, with the final screening and storage building at the bottom and the primary crusher on the side of the hill. The present quarry level is 25 ft. above the primary crusher and 50 ft. above the truck loading level in the valley. The quarry is being developed in 40-ft. lifts up the hill and can be lowered another 40 ft. by digging a drainage ditch.

The quarry face was opened by snake-holing with three Ingersoll-Rand wagon drills using 3-in. Car-Set bits. As the development progressed, vertical holes were used in combination with snakeholes in order to bring up the bottom. For the vertical holes 2¼-in. Car-Set bits are used. Air for these drills is supplied by two Ingersoll-Rand 600-c.f.m. Mobil-Air portable compressors.

In a typical shot made late in 1952 there were seven rows of vertical holes spaced 6 ft. in each direction and 20 long and short lift holes, the short ones to take out the toe. There were four series of holes in separate groups, including one from the lifters, each leading to a heavier lead wire to a 50-cap blasting machine. American Cyanamid delay caps were used from instantaneous up to No. 6. After trying several speeds the best results were found to be obtained with 40 percent special gelatin—also American Cyanamid.

Above: A general view of the Roncari plant, with the screening building at the right and the stone silo in the background.

Below: One of the two 6-cu. yd. haulage units dumping rock from the quarry into the primary crusher.

Above: The 4- by 16-ft., three-deck screen which does coarse sizing of the rock.

Right: The feeder and the 2-ft. 4-in. gyratory recrusher which is fed by truck from bins.

The 15,000-ton sand stockpile, showing the tunnel beneath for direct truck loading.

The black-top plant at the quarry location has a 600-ton-per-day capacity.

Raymond A. Roncari, one of the Roncari brothers, in the main office directing delivery points from the base station.

J. Douglas Barberie, the concrete plant superintendent, directing transit-mix units and receiving orders by radio truck, instead of by telephone.

Transit-mix units are equipped for faster, better service.

Secondary breaking of the rock is done with a pear-shaped drop ball handled by a P&H ½-cu. yd. truck crane and dropped from the full height of the 40-ft. boom. The ball is controlled by a tagline and connected to an old rubber tire to take the shock off the machine. The use of closely-spaced holes and extra explosive in blasting is found to result in very little large rock which must be broken down further for the primary crusher.

A Bucyrus-Erie 37B shovel with a 1½-cu. yd. dipper and a 1¾-cu. yd. Bucyrus-Erie shovel load the stone into two 6-cu. yd. Koehring Dumptors. The small shovel is usually kept in reserve; but when both are in use, one or two dump trucks are also used. The haul to the primary crusher is about 1,000 ft.

The rock is discharged into a 3- by 15-ft. Traylor heavy-duty apron feeder ahead of the new 42- by 40-in. Style E Farrel-Bacon primary jaw crusher. The 5-in. minus crusher product is carried on a 30-in. by 100-ft. inclined belt conveyor (No. 1) to a covered reinforced concrete surge silo which has a live storage capacity of 900 tons. A Syntron F45 electric vibrating feeder discharges the rock from the silo onto conveyor No. 2, which is 30-in. wide and 100-ft. centers. This conveyor in turn discharges to a 4- by 14-ft. Screen Equipment Co. Seco 2-deck scalping screen, which is equipped with 4- and 2-in. cloth. The 4- to 5-in. oversize off the top deck goes to a 30-ft. Traylor TY gyratory crusher with a 12-in. feed opening. The 2- to 4-in. material off the bottom deck goes to another 3-ft. TY crusher with a 7-in. feed opening. These two crushers reduce to 2½- and 1¾-in. minus, respectively.

The product of both crushers is discharged on a 24-in. by 75-ft. return belt conveyor back onto the No. 2 conveyor, forming a closed circuit.

The minus 2-in. material passing through the bottom deck of the scalping screen is discharged on a 30-in. by 100-ft. belt conveyor (No. 3) to the top of the screening building. There it goes over a 4- by 16-ft. 3-deck Seco screen which makes 2-, 1¼-, and ¾-in. stone over its decks. The material through the bottom deck drops onto a 5- by 16-ft. 2-deck Seco screen which makes ½- and ⅜-in. stone and dust. All six sizes are chuted from these screens into a 6-compartment, 700-ton reinforced concrete bin structure under which trucks are loaded through clamshell gates.

When recrushing is necessary, the large sizes of stone are taken by truck from the bins to a Barber-Greene reciprocating feeder ahead of a 2-ft. 4-in. Traylor TY gyratory crusher. The product is fed by a 24-in. by 40-ft. belt conveyor onto conveyor No. 3 to the sizing screens.

Electric motors are used throughout the plant, and these use 400-v. current which is reduced at the site from the 2,300-v. power line. The primary crusher has a 200-hp. motor, and the two secondary crushers have 100-hp. motors. The recrusher is driven by a 75-hp. motor. Screens and conveyors are driven by individual U. S. gear-head motors ranging from 7½ to 20 hp. New York Stonore conveyor belting is used throughout.

The company has its own delivery fleet which consists of 18 end-dump trucks and three tractor-trailer dump units. All shipments are weighed on a 50-ton Howe scale equipped with a Weightograph.

The company also produces sand and gravel from a 35-acre deposit 10 miles from the office and yard in Windsor Locks and 5 miles from the quarry. This plant has a capacity of from 50 to 60 t.p.h.

At the office there is storage for sand and gravel and crushed stone and a 15,000-ton sand stockpile, with direct tunnel loading to trucks. For ready-mixed concrete production there are five aggregate bins totaling 200 tons' capacity, and a 600-bbl. bulk cement bin, batcher, scales, etc. Concrete is delivered in 12 Ransome truck mixers—nine of 4½-cu. yd. and three of 5½-cu. yd. capacity. Six are mounted on Sterling and six on White truck chassis.

This company has for several years been developing a system for direct communication between its plants, trucks, etc. The first step in this direction was the installation of five radio telephone units through the telephone company in Hartford. These were installed on the three automobiles, the master mechanic's truck, and an equipment trailer. They were so helpful in conducting the business that application was made and an F.C.C. license was obtained for a short-wave system.

The Motorola radio system recently installed operates on a frequency of 49.90 megacycles and an output of 120 watts. Three base stations are required because of the distance between the concrete plant, the quarry, and the asphalt plant. This arrangement makes it possible for any of the dispatching offices to control all units for anything that may arise. Thirteen units have already been installed, 17 more are now being installed, and 20 more will later be added, making a total of 50. The first units to be equipped were the superintendents' cars and pick-ups, and the aggregate delivery and concrete mixer trucks.

With this system cars and trucks can communicate with each other, as well as with the base stations. Every call placed on the air is picked up by all cars, making it possible to tie in all operations as one solid organization. In case of trouble, the nearest unit can quickly be of help. As most jobs are outside metropolitan areas where phones are not usually available, this system is a great help. The range is over 25 miles; and because the company has a private channel, there is no delay or interference.

According to Raymond Roncari, this system is no luxury but an absolute necessity. It is saving the company substantial sums by eliminating delays, facilitating the servicing breakdowns, and improving efficiency generally. Short-wave radio communication has proved especially valuable in fulfilling a 110,000-ton contract for trap rock and a 20,000-ton bituminous concrete contract for the construction of 22 miles of the Connecticut Wilbur Cross highway.

Officers of Roncari Construction Co., Inc., are: Albert J. Roncari, president and operator of the foundation company; Raymond A. Roncari, vice-president and purchasing agent; Angelo J. Roncari, treasurer and general superintendent; E. M. Colo, secretary. All three brothers have had an excellent background, chiefly in the construction field. Angelo started out as a water boy at the age of 14 and later became a foreman on construction work.

General view of the Dolese and Shepard Co. plant in McCook, Ill. Note the new primary crusher building located on the quarry floor, with the conveyor gallery leading to the secondary crushing building.

# Dolese and Shepard *Revamps Quarry Haulage System*

***Chicago area firm moves primary crusher to quarry and installs long belt conveyor to stone plant; also features heated screens.***

**By KENNETH A. GUTSCHICK**

A closeup of the new belt conveyor gallery, which is divided into three sections. The abandoned control tower for remote control electric quarry car operation is seen at the right of the conveyor.

another ON THE SPOT report

IN line with recent trends in the crushed stone industry, Dolese and Shepard Co. (founded 85 years ago), one of the largest and oldest producers of crushed limestone in the Chicago area, has recently completed several major changes in its production setup at its plant in McCook, Ill. First and foremost has been the elimination of a remote-control electric car-haulage system in the quarry, coupled with the moving of the primary crusher into the quarry and the erection of a long belt conveyor leading to the stone plant. Another important alteration has been the installation of electric heating units on four of the plant's finishing screens. Other changes involved the introduction of modern and extensive truck- and car-loading facilities which have reduced the waiting factor to the minimum.

These improvements were effected in the early part of 1953, and results up to date have been very satisfactory. The present conveying system has enabled production to be stepped up to 880 t.p.h.—a gain of about 25 percent (without the increase in shovel capacity); and operating costs have been substantially reduced at the same time. Other important advantages have also resulted. The value of heated screens has been amply demonstrated not only by an increase in production of smaller stone sizes, but also in higher quality products. And the speeding up of truck and car loading has meant better service to customers.

Under the old transportation system, which had been used for over 40 years, the quarried material was loaded by power shovels directly into 10-cu. yd. electrically-operated quarry cars, and conveyed along the quarry floor and up a long gradual incline out of the quarry to the primary crusher. The quarry cars, each equipped with either two 50-hp. or two 35-hp. d.-c. motors, were operated by remote control from a control tower located at the quarry's edge. Power for the operation was provided by one 400-kw. motor generator set and two 200-kw. motor-generator sets, and transmitted to the quarry cars by third rail. Fifteen cars were used, each car operating independently in its trip from the shovels to the primary crusher and back.

In 1951 the system was streamlined somewhat. The track system in

A quarry truck being loaded by a 3½-cu. yd. diesel-electric shovel. Prior to 1951 electrically-operated quarry cars were used to convey the stone from the shovel to the primary crusher.

the quarry was replaced by quarry roads, and diesel trucks were placed in service to convey the material from the shovels to a transfer point located on the quarry floor in close proximity to the stone plant. Here the stone was transferred to the electrically-operated quarry cars and conveyed to the primary crusher in the same manner as before.

The complete abandonment of the electric-car haulage system was spurred on by several important factors. In the first place the continuity of flow was frequently disrupted by breakdowns of the electrical equipment under the rigors of quarry operation. The quarry car motors in particular presented serious problems, especially during rainy, foggy, and wintry weather. There was also the daily man-hour consuming task of maintaining and operating the entire rail system. The changeover not only effected a continuity of flow, but also substantially reduced manpower requirements, mainly through elimination of the track and car maintenance gang.

Other major advantages resulted from moving the primary crusher building to the quarry floor. Most important was the additional roadway space in the vicinity of the truckweighing station. The roadway was increased in width from 40 ft. to 140 ft., thereby allowing adequate truck turn-around space. In addition, the move eliminated some of the excessive noise and dust around the quarry office.

In the actual quarrying operation, the stone is obtained from two levels —a 55-ft. east wall and a 38 ft. north shelf. The deposit, part of the Niagaran series (Middle Silurian age), is primarily a medium to massive-bedded high-purity dolomite. The northeastern section of the quarry contains reef-flank beds which are parts of a fossil coral reef whose core is northeast of the quarry.

Four Bucyrus-Erie 27-T well drills are used in drilling the 6-in. primary blast holes. Blasting is accomplished with Atlas 5½-in. dia. dynamite, which is detonated electrically with millisecond delay caps. A variety of blasting practices are used, based upon the peculiarities of the rock strata. Thus, the spacing, burden, loading, speed of dynamite used, etc., varies with each shot. Alternate velocity loading is generally followed; delay caps are positioned at the base of each hole. Yield and fragmentation are reported to be very satisfactory.

Quarry loading is handled by two Marion shovels—one a 4161 electric unit mounting a 4½-cu. yd. bucket and the other a 111-M diesel-electric unit mounting a 3½-cu. yd. bucket. Seven 15-ton Euclid 80-FD diesel end-dump trucks transport the quarried dolomite to the primary crusher over a 3,500 ft. haul. The quarry roads are kept in excellent condition. Twice a day random truck loads are weighed on the truck scale in order to ascertain accurately the daily production.

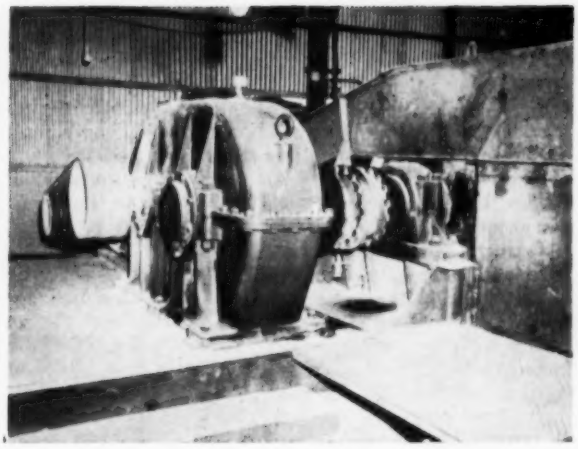
The truck loads are dumped onto a 45-deg. chute which feeds directly to the primary crusher—an Allis-Chalmers No. 18 (42-in.) gyratory unit. The drive for the crusher is a 250-hp. General Electric induction motor through 12 Boston V-belts. The stone is discharged through twin openings into a 30-cu. yd. hopper mounted over a Kensington 36-in. by 15-ft. Oro manganese apron feeder, which in turn feeds the conveyor belt leading out of the quarry to the secondary crusher building. Under this arrangement of twin discharge chutes serving one feeder, the feed to the belt is necessarily uniformly mixed, even though there may be segregation at each chute. This was not the case in the former production setup, when material from each discharge point was conveyed separately *via* belts to separate but identical scalping screens. Generally one of the screens was overloaded with fines caused by segregation of material in the crusher. This, then, is one additional improvement over the old system.

The stone feed from the hopper is controlled by swing hammers. The drive for the Oro feeder is a 10-hp. Allis-Chalmers motor through Boston V-belts, a Jones herringbone speed reducer, and chain and sprocket. The transfer of stone from the feeder to the belt is effected *via* a cascade-type chute, which is constructed of manganese plate. This type of chute re-

Looking down the 45-deg. truck dumping chute into the 42-in. gyratory primary crusher.

View of the 36-in. by 15-ft. manganese apron feeder mounted beneath the crusher. Note the cascade-type chute, which tends to reduce belt wear at the loading point.

View of the new 42-in. by 733-ft. belt conveyor. Note that the roof in this concrete tunnel section is constructed of wooden timbers (topped by concrete); this prevents moisture condensation.



One of the twin drives for the new 42-in. conveyor belt. The speed reducer shown here is driven by a 125-hp. slip-ring motor hidden from view.

duces belt wear at the loading point. It is so shaped that the load is crowded toward the center of the belt. Another interesting feature at this point is that the belt conveyor extends beneath the entire feeder and thus can collect fines sifting through the feeder.

The belt conveyor is a 42-in. by 733-ft. unit inclined at a 15-deg. angle; it elevates the stone some 190 ft. above the crusher pit. Seven-ply ¾-in. Bulldog No. 112 rubber belting, which was supplied by the Boston Woven Hose and Rubber Company, is used; it was furnished in two 750-ft. rolls and vulcanized into one continuous belt on the job. In order to accommodate the heavy load, the belt is made with high-tensile fiber and has a ¼-in. top thickness with an integral breaker strip, and a 1/16-in. bottom thickness. Barber-Greene heavy-duty troughing idlers, spaced 18 in. apart at the loading point and gradually increasing to 4½ ft. apart at the discharge end, are used in the installation. In addition, rubber-covered idlers and transition idlers are used at the loading and discharge points respectively; the latter idlers allow the belt to flex naturally when approaching the head pulley. The conveyor belt is also equipped with an automatic belt take-up which measures about 40 ft. in overall length.

The drive for the conveyor is unique, consisting of two 125-hp. Allis-Chalmers slip-ring motors, each powering a Jones Model 405/DH herringbone speed reducer through Boston V-belts. The reducers are in turn direct-coupled to the Dodge head pulley of the conveyor. The motors can be operated at seven speeds, which allows the conveyor belt speed to be gradually increased before it reaches its optimum speed of 300 f.p.m. The belt conveyor and feeder are controlled by interlocking

View of one of the 4- by 10-ft. double-deck scalping screens and the secondary gyratory crusher.

Virgil Yantz, assistant master mechanic; W. D. Heller, superintendent; and N. Crnkovich, chief clerk.

switches; thus the feeder will not run unless the belt is operating. One interesting feature of the conveyor drive is that one of the motors can drive the belt under full load, although at a reduced velocity. Thus a breakdown of one motor drive does not stop production.

This major changeover was designed and engineered by Mines Engineering Company, Chicago. The engineering firm also undertook the initial study to determine the feasibility of the proposed program. The entire project was accomplished during a 43-day period in March and April of this year. During this amazingly short period of time, the No. 18 crusher was dismantled, the steel crusher building was torn down, both units were moved to the quarry floor and erected, and the conveyor belt and conveyor gallery were installed. The crusher was installed in a 44-ft. concrete pit. It is interesting to note that the Marion 4161 shovel was used as a crane in erecting the heavy crusher. The crusher building was completely rebuilt, and ample space and equipment for removing heavy crusher parts during future repairs were provided.

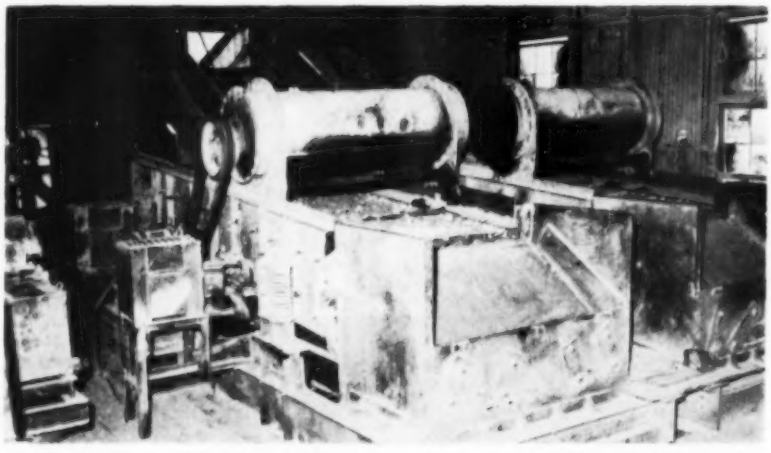
An outstanding feature of the construction project centered around the extensive use of used steel obtained from the trestles of the abandoned rail system, from the torn-down primary crusher building, and also from the old bucket elevator section which joined the primary and secondary crusher buildings. The decision to use this type of steel was based largely on the fact that new structural steel was difficult to obtain at the time of construction. This improvisation certainly reflects the ingenuity of Dolese and Shepard Co. personnel and the engineering firm.

The conveyor belt gallery consists of three distinct sections, starting with a 143-ft. concrete tunnel, followed by a 150-ft. section which is supported by trusses and covered with corrugated steel sheeting. The final and longest section possesses a roof cover of half-round corrugated steel which encloses the belt and the walkways but not the sides. The trusses used in the 150-ft. section represents the total extent of this type of steel obtained from the torn-down bucket elevator section mentioned earlier. The roof in the tunnel section is somewhat unusual, made of wooden timbers supported by iron rails obtained from the old track system and topped with concrete. The use of wood rather than concrete above the conveyor belt tends to eliminate moisture condensation over the belt.

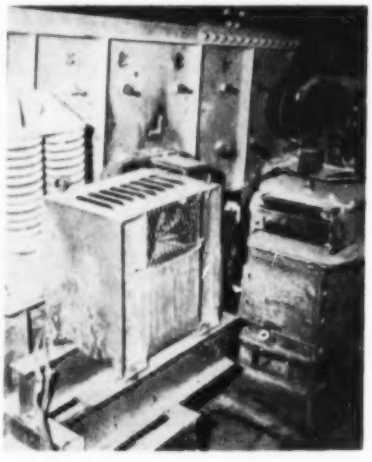
With the exception of the addition of heated screens, the remainder of the stone plant has remained essentially the same for many years. To complete the picture of the operation, however, the plant will be described briefly. Four separate buildings, arranged in a straight-line flow, house the crushing and screening facilities of the stone plant; these include the secondary crushing building, the surge bin and tertiary crushing building, the roll crusher building, and the screening building.

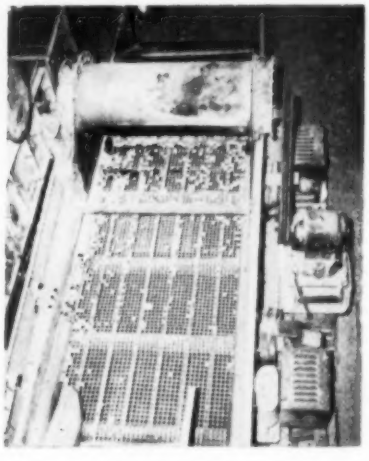
Feed from the 42-in. conveyor belt is first scalped on two Hewitt-Robins Gyrex 4- by 10-ft. double-deck screens, each equipped with 3-in. and ¾-in. wire cloth. Minus ¾-in. stone is conveyed on a short belt to a truck loading-out hopper and serves as crusher run stone (designated Grade 14 in Illinois). The oversize from the scalpers is reduced by a pair of Allis-Chalmers No. 9 gyratories. The stone from each crusher is next chuted to one of two 4-ft. dia. by 26-ft. trommel screens, each equipped with 2¼-, 2½-, and 4-in. openings. Oversize stone is conveyed *via* a 42-in. by 80-ft. chain bucket elevator to a 500-cu. yd. four-compartment surge bin located in the tertiary crusher building and thence gravity fed to two 4-ft. Symons standard cone crushers. Material from the cone crushers then joins with the throughs from the trommel screens and is conveyed *via* two 36-in. by 355-ft. inclined belt conveyors to the finish screening building. The surge bin also serves as storage for flux stone, which is used by the Chicago area steel industry; facilities for rail car loading are available at this point. Two Allis-Chalmers No. 6 gyratory crushers are also located in the tertiary crusher building.

Initial sizing in the screen house is done on a group of four Hewitt-Robins 5- by 14-ft. double-deck Eliptex screens, each of which is equipped with a pair of Hannon Model 3020 electric heating units. Generally 1½-



Views of the 5- by 14-ft. double-deck screens, each of which is equipped with two electric screen heaters. The heating units produce low-voltage, high-amperage current which heats the bottom deck cloth of the screen to about 150 deg. F. Bottom left: A closeup of one of the heaters. Bottom right: Looking down on a screen.





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in. wire cloth is used in the top deck and No. 3 mesh on the bottom deck. Only the bottom decks are heated. Each heated screen, driven by a 15-hp. motor, is operated in circuit with one of four trommel screens and one of four 4- by 10-ft. double-deck vibrating screens (two Symons and two Hewitt-Robins Gyrex units). The rotary screens size the plus 1½-in. material, and the double-deck units the minus 1½-in. plus 3-mesh material. Minus 3-mesh material is conveyed *via* a belt to an outside storage pile and serves as screenings. Agstone is produced on the 4- by 10-ft. screens from 4-mesh cloth. The finished products are stored in ten large-sized bins and can be loaded directly into either trucks or rail cars.

The roll crusher building adjacent to the screen house is equipped with four 54- by 24-in. double-roll crushers (two Pioneer and two Superior), which are used for recrushing coarser material reclaimed by belts from the storage bins. These roll crushers are operated in closed circuit with the four heated screens, the material travelling *via* 24-in. belt conveyors which in turn feed the twin 30-in. conveyors issuing from the Symons crushers.

The Hannon screen heaters were installed in January, after which followed a short period of experimenting in order to determine the optimum operating conditions. The main problem was to distribute the heat uniformly over the screen. Each heating unit possesses a dry type transformer which reduces the incoming 440 v. to 2 to 5 v. and simultaneously builds up the current to 5,000 to 6,000 amp. This low-voltage, high-amperage current heats the 3-mesh plain steel screen cloth to approximately 150 deg. F. and thereby eliminates blinding by removing the surface tension of the particles that would normally adhere to the screen cloth. Direct contact is made with the screen cloth by the Hewitt-Robins-Hannon method through use of insulated copper distribution bars mounted under the screen cloth and permanently fastened to the screen live frame.

The screen cloth temperature can be varied considerably by simply adjusting a rheostat, which in turn alters the current passing to the screen. This is an important feature, allowing the operator to compensate for variations in the surface moisture and temperature of the material, rate of feed, air temperature and humidity, and other conditions.

The heated screens are especially valuable in the production of high-quality fine aggregates. For example, the Illinois State Highway specifications for I-11 chips (used primarily in bituminous concrete) call for less than 5 per cent passing 10-mesh. With the use of conventional screens, this specification is frequently difficult to meet, particularly when the stone is damp and/or contains a small percentage of clay—a very prevalent condition in a quarrying operation. Not only does blinding occur, but an abundance of fine particles adhere to the larger particles. Heated screens tend to eliminate this serious condition, thereby keeping the minus 10-mesh material to the minimum. In addition to promoting efficient screening, heated screens also result indirectly in increased production, since down time for cleaning screens is lessened. The life of the screen cloth is also extended considerably. The cost of operating the electrical heating units is relatively small; Dolese and Shepard Co. reports the electrical power cost to be about 50 cents per hour for heating the four double-deck screens.

Another recent major improvement at the quarrying firm centers around the streamlining of truck and rail car loading facilities. Several new yard hoppers have been added, which are used for sand, Grade 14, and other materials. Two 1¾-cu. yd. Marion cranes (Models 352 and 362) are used for charging the hoppers, for unloading sand from gondolas, and for direct loading of trucks. The company also uses two Hough Payloaders and an Allis-Chalmers HD-20 tractor-loader for truck loading. The latter machine is also used for cleanup around the shovels and for quarry road maintenance. The addition of these facilities, coupled with increased roadway space around the truck scale office, has cut truck waiting time to the minimum.

Officers of Dolese and Shepard Co. are A. R. Hock, president; Wm. Roy Carney, vice-president; William J. Stoffel, treasurer; and Bartholomew P. Doody, secretary and comptroller. W. D. Heller, a veteran of the mining and quarrying industries, is the superintendent.

The McCook plant produced over 1,300,000 tons of crushed stone in 1952, the bulk of which was used as concrete aggregate. Other uses include agricultural limestone, flux, railroad ballast, and road material. The company recently added a ready-mixed concrete plant at the quarry site. The plant, a Noble Company installation, produces about 100 cu. yd. of concrete per hour.


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Statement required by the Act of August 24, 1912, as amended by the acts of March 3, 1933, and July 2, 1946 (Title 39, United States Code, Section 233) showing the ownership, management, and circulation of PIT AND QUARRY, published monthly at Chicago, Illinois, for October 1, 1953.

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William T. Klussman and Lanetta B. Smith, Trustees of Ray Light Smith, 3rd, Trust No. 1, same.
William T. Klussman and Lanetta B. Smith, Trustees of Stephen Howard Smith, Trust No. 1, same.

3. The known bondholders, mortgagees, and other security holders owning or holding 1 percent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. Paragraphs 2 and 3 include, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of [illegible] tee is acting; also the statements in the two paragraphs show the affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner.

5. The average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the 12 months preceding the date shown above was: (This information is required from daily, weekly, semiweekly, and triweekly newspapers only.)

JAMES S. MONTGOMERY,
*Signature of Business Manager.*

Sworn to and subscribed before me this 17th day of September, 1953.
(SEAL) FRANK J. CORNYN.
(My commission expires Sept. 5, 1954.)


The M. J. Grove Lime Company, Lime Kiln, Md., has been awarded the contract for the approach on the Maryland shore to the new Potomac River bridge at Brunswick, at a figure of $112,308. The project includes a concrete section.

A contract totalling $73,130 was awarded to the New Enterprise Stone & Lime Company, Inc., Harrisburg, Pa., for the construction of a section of Route 36 near Altoona, Pa., which is being widened to a four-lane highway.

This equipment setup of the McNutt Brothers of Eugene, Oreg., on the Douglas County road job is typical of the way unwashed road material is produced.

# Completely Mobile Plant Setup Permits Operational Flexibility

another ON THE SPOT report

THE firm of McNutt Brothers, Eugene, Oreg., is a pioneer construction concern operating in the Pacific Northwest. For years most of its contracts have been in the road-building field, and it has relied on a fleet of Pioneer portable crushing and screening plants to process aggregates on location at the job. Mounted on pneumatic tires for the most part, the various units can be quickly moved to a new site when a job is finished and just as quickly set up and ready for a new task.

Basic units include a Pioneer 54-V plant incorporating a 54- by 24-in. twin-roll crusher; another utilizing a 4- by 10-ft. screen and 40- by 22-in. triple-rolls for final reduction; and two portable jaw-crushing rigs, one mounting a 30- by 42-in. primary unit, the other a 15- by 36-in. jaw machine. These are linked together by portable belt-conveyors, field hoppers, and truck-loading bins and arranged in varied flow-sheet sequence to suit the demands of the particular job at hand.

After the last highway jobs had been finished in Lincoln and Douglas counties, in Oregon, the equipment was moved late in the spring of 1953 to a Willamette River deposit near Dexter, Oreg., where McNutt Bros. have contracted to supply 125,000 tons of specification aggregates for

(*Continued on page* 124)

Right: Excavating and loading operations in opening the pit at Dexter Dam.

Below: Using the same portable equipment, this is the McNutt Brothers setup for making washed aggregates at Dexter Dam.

# Slag Assn. Marks 35th Year With Record Meeting at Pittsburgh

another ON THE SPOT report

THE 36th annual meeting of the National Slag Association, held at the Schenley Hotel in Pittsburgh September 15 and 16, was marked by the largest attendance in the history of the organization. A highlight of the two-day affair was a trip of inspection to slag plants and mate-

By WILLIAM M. AVERY

Some of the members of the inspection party, which comprised one of the highlights of the 36th annual meeting of the National Slag Association, lined up for this group picture during the stop for lunch.

rails yards of the Duquesne Slag Products Company, as well as to some outstanding slag concrete construction projects in the Pittsburgh area. The trip was made by bus and chartered river boat, with stopovers at various points to permit inspection. Facilities and all arrangements for this important part of the program were provided and made by host-members R. K. Plumb of U. S. Steel Corporation, and R. O. Dierker of Duquesne Slag Products Co.

Safety played its customary important part in the agenda of the meeting through the presentation of the PIT AND QUARRY bronze plaques to winners of the fourth annual (1952-53) National Slag Association safety competition conducted by the U. S. Bureau of Mines. At a special luncheon presided over by Dr. H. F. Kriege the trophies were presented to representatives of the Birmingham plant, Sloss-Sheffield Steel and Iron Division of United States Pipe and Foundry Company, and the Swedeland plant of the Philadelphia Slag Company. A full report of the 1952-53 plant safety competition was presented by S. T. Reese, chief, Accident Analysis Branch, U. S. Bureau of Mines. A summary of the report and illustrations of the bronze plaques, appeared on page 80 of this publication's October, 1953, issue.

Among important actions taken at the Pittsburgh meeting was the approval of a research fund to investigate new uses for slag, and the decision to carefully consider the formation of an Operating Division within the framework of the National Slag Association. Discussion of the latter subject revealed sentiment favoring a separate gathering at which operating personnel of member companies could discuss operational problems. A special committee to be appointed by Association-president C. A. Barinowski will draw up a prospectus for future consideration by the board of directors of the organization. All the officers and directors of the association were re-elected.

In recognition of the fact that the Pittsburgh meeting marked the 35th anniversary of the formation of the National Slag Association, W. E. Bliss, one of the founders and a past president of the group, read a memorandum entitled "The Slag Association in Retrospect". In tracing the growth and development of the association since the initial meeting at Columbus, Ohio, on January 16, 1918, Mr. Bliss stressed the importance of the early discovery that good pig iron and good slag could be made simultaneously. He expressed the belief that except for this circumstance slag would have remained a waste product instead of becoming the important by-product it is today. The present almost universal acceptance of slag, the speaker said in closing, augurs well for the industry's prospects in the years ahead.

In his annual report as director of research Fred Hubbard presented a resume of the status of research projects recently completed or already in progress, and discussed briefly some work which he believes might

A number of the directors enjoyed the warm sunlight on the upper deck of the river boat "Steel City", which carried the party up the Monongahela River.

This crushing and screening plant of the Duquesne Slag Products Company was one of the many points of interest covered by the inspection party.

profitably be undertaken in the future. Under the first heading he referred to an investigation to determine the results of the application of proportioning concrete when applied to blast furnace slag. The report submitted to the membership in April of this year indicates that for the various maximum sizes of aggregate, cement factors and slumps, the values for the proportion of fine to coarse aggregate, water content, and desirable air content are adequate for proper proportioning of slag concrete. Mr. Hubbard said that the results given in the report are being used to a large extent in revising the association's concrete proportioning tables. These tables, he announced, will be ready for presentation to the technical committee at the next meeting.

According to the speaker, the largest single activity of the association's laboratory during the past year has been a study of plastic concrete made with expanded slag. When the project is completed, some 1,350 concrete specimens will have been made and tested. An unusual amount of preliminary work was necessary before the main series of tests could be undertaken, and Mr. Hubbard explained this on the basis that the usual methods of designing mixes with conventional aggregates cannot be applied to expanded slag.

Mr. Hubbard also discussed the results of a study conducted in cooperation with the Ohio Department of Highways to determine the quality of portland cement concrete made from a blend of slag sand and natural sand. Tests were made of concrete with fine aggregate composed of 0, 10, 20, 30, 40 and 50 percent slag sand in combination with natural sands of a finer grading than would be permitted under Ohio specifications if used alone. The association's tests indicate that blending of slag and natural sand is entirely feasible, but the results obtained by the Ohio Department of Highways have not been disclosed. If the association's findings are confirmed, Mr. Hubbard believes that another outlet may have been created for slag sand in those localities where production at present exceeds demand.

Mr. Hubbard spoke at some length concerning the urgent need for laboratory test methods by which the quality of bituminous concrete can be predicted. He suggested to the group that the National Slag Association undertake a research project to correlate results from various test methods with field behavior by comparison of laboratory specimens with cores drilled from pavements both at the time of construction and after having been subjected to traffic for a considerable period. As outlined by the speaker, the project would include a study of densities or unit weights of the compacted mixtures, voids, stability, flow, effect of water, and effect of traffic compaction and should also include studies of stone and gravel mixtures for comparison. Although such studies would come under the heading of major research, Mr. Hubbard believes that various highway departments and producers of bituminous concrete would cooperate in the undertaking.

As a part of his report covering the first five months of the association's fiscal year, E. W. Bauman, managing director, reviewed the industry's production in 1952. The total output of 26,900,000 tons of all types of slag, Mr. Bauman said, represented a drop of approximately 10 percent from the preceding year. This loss, he pointed out, was the direct result of strikes in the steel industry, and he predicted that there would be a sufficient gain in the current year to wipe out the loss and possibly establish a new production record of 30,000,000 tons or more. As in previous years, highway construction and railroad ballast are accounting for a very large share of the tonnage.

Under the general heading of important recent events, Mr. Bauman listed the classification of slag as a mineral aggregate in a listing of essential raw materials by the Renegotiation Board, and the recognition of slag as an aggregate in the Bureau of Yards and Docks most recent specifications for portland cement concrete pavements for airports. In connection with the latter development the speaker mentioned as a matter of interest that slag has been used recently on several large Navy airport runways which will serve jet planes extensively.

Mr. Bauman described the fire tests on expanded slag block conducted at Underwriters Laboratories, as one of the "more extensive" research projects undertaken by the National Slag Association. He disclosed that this undertaking would shortly be brought to a successful conclusion by Underwriters' issuance of revised standards on concrete masonry units, and he promised that copies would soon be made available to members of the association.

In making reference to association activities in the field of advertising and publicity, Mr. Bauman mentioned the continued popularity of the *Slag Book*, the *Slag Block Manual*, and the *Slag Catalogue* carried in Sweet's. He revealed that the 8-page insertion in the 1954 edition will include recommended specifications of slag for various uses, and will also list some of the more popular slag pamphlets that are available through the association's offices.

Mr. Bauman disclosed that as soon as the revised Fire Underwriters' standards are available, steps will be taken to revise and reprint the *Slag Block Manual*. He expressed the hope that the new manuals, as well as reprints of the catalogue insertion in Sweet's, would be available for distribution to members before the end of the year.

In touching briefly on the subject of research, already covered in detail by Mr. Hubbard's report, Mr. Bauman mentioned the possible use of

*(Continued on page 124)*

# WASHINGTON NEWS LETTER

another P-and-Q exclusive

SOLUTION of the economic dilemma in which the Eisenhower Administration finds itself appears to be more remote now than when the President took office. Time to find the solution is fast running out. The absolute deadline will be at the 1954 Congressional elections.

The dilemma results from the following set of circumstances:

1. The government's income is almost certain to decline.
2. The government's outgo is likely to change very little. It may actually increase; but even if it should decline, the drop will be less than the drop in income.
3. The result must be the continuation of budget deficits and an imperative rise in the government's debt limit. This is precisely what the Republicans promised they would eliminate post-haste.

By now a decline in government income is a virtual certainty. There seems to be no doubt about the death of the excess profits tax. As was reported on this page previously, the story heard around Washington was that the necessary votes to extend that tax were secured only because the Administration gave its word that no further extension would be requested. There is litte doubt that that pledge will be honored.

There was some talk that when the excess profits taxes were eliminated, the normal corporate income tax would be increased to compensate partially for the difference. This would, of course, be shifting a part of the burden from corporations which have shown outstanding profit increases to those with a less spectacular profit history. Particularly because of recent declines in corporate profits, any increase in the corporate income tax appears to be a dead issue. A small decline in that tax rate is far more likely.

Reducing corporate income taxes, both excess profits and normal, without at the same time reducing individual income tax rates is inviting political disaster. With the 1954 Congressional elections practically around the corner, the scheduled 10 percent cut in individual income taxes is also practically certain.

Even without these reductions in the tax rates, government income was probably due to fall. This results from the fact that profits have been squeezed, and consequently the larger individual incomes which are derived primarily from profits have also been squeezed. In our tax system, where the bulk of the tax revenue comes from progressive income taxes, that is, where the tax rate increases with the size of the income, even a small decline in business profits and the incomes derived from business profits results in a large decline in tax income. Tax rate reductions, in addition, make the drop so much more serious.

The principal suggestion for offsetting this drop has been a general manufacturers' excise tax. This has been defended by its proponents as a necessary tax to give the tax structure a higher degree of stability. The revenue derived from it would not be as variable as that derived from an income tax. It would provide substantial revenue and its administration would be rather simple, since payments would be made by only a relatively small number of manufacturers.

Opponents of such a tax have been quick to point out its similarity to a general sales tax, which has long been regarded as undesirable because of its regressive characteristics: that is, it applies the same tax rate to the purchases of all income groups, thereby taxing most heavily those who spend all or most of their incomes. Since it is the low-income earners who are forced to spend all of their incomes, they bear the heaviest tax burden. The opponents contend that a manufacturers' excise tax is even worse than a sales tax, since it raises the price to the consumer even more because the various levels of distribution, wholesale, distributor, and retailer and their conventional percentage mark-ups to their cost price, which includes taxes previously paid.

The best current prediction about the fate of the proposed manufacturers' excise tax is that the feared political repercussions will kill off most of it. There may be a few items added to the present list on which there are already excise taxes; but as a revenue raiser it will be pretty much of a failure.

With respect to the government's outgo, the Eisenhower Administration has discovered that there is no easy way to reduce it without taking some very unpleasant and perhaps unwise measures. Republican department heads have discovered that the elimination of excess stenographers, clerks, and even lawyers, would yield only insignificant savings. They have had difficulty finding the excess manpower, the overlapping functions, the waste and extravagance which they were so certain existed when they were looking in from the outside.

The only real possibility for sizable savings, they have discovered, is a reduction in military and foreign aid expenditures, the bulk of the latter also being for military purposes. Even the small reduction in these expenditures has brought substantial criticism and accusations of jeopardizing the nation's safety. The President is one of the men best equipped to judge the risks involved. It appears that he is becoming increasingly concerned.

His announcement about Russia's atomic and hydrogen bomb progress, while calculated to allay some fears, also indicated the seriousness of the situation. If real civil defense measures are taken, government outgo will soar.

Thus, the prospect of a balanced budget—a consummation devoutly wished for for over two decades—appears to be dim, indeed. As a matter of fact, talk is beginning to be heard in Washington that "there is something worse than a government deficit" and that "a little inflation" may not be a bad thing. The school of thought that a little inflation is required to maintain incentives in the free enterprise system is growing in numbers and stature. The recent reversal of the hard money policy may be the early evidence that the climate of economic opinion in Washington is changing.

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### Federal Charter Approved For National Safety Council

By action of Congress and President Eisenhower, the National Safety Council is now operating under a federal charter. According to Ned H. Dearborn, president of the Council, it will continue to be a privately operated and financed membership association. No government funds will be appropriated, and no change will be made in membership service or dues.

The transition will involve the transfer of the Council's assets as an Illinois corporation to the newly-authorized federal corporation. Formal presentation of the charter took place recently during the National Safety Congress in Chicago.

# YOU get more for your money than just a tractor!

WHEN you buy a piece of Cat* equipment, you think of a lot of other things besides tough steel and yellow paint. Things you can't see or feel or touch, but that will help you make *more money this year—and year after year!*

You *know*, for instance, that you can count on profitable production because your equipment will keep you on schedule. Its stamina, *plus* on-the-spot service from your Caterpillar Dealer, cuts down time to the minimum.

You *know* the bank will give you better financing on big yellow machines because of their reputation.

You *know* there are no "orphans" in the line. You can work Caterpillar machines profitably for years and *always* get parts for them—at the standard low list price.

You *know* that day after day, week after week, month after month, they will do *more* work with *less* down time at *lower* cost than any competitive units.

And, finally, you *know* that when you're ready to trade in a Cat machine you'll get more money for it—the *top* resale value in the field.

Getting ready to buy mining units? Fine. Look them all over. *But look at their last cost first.* Remember what you *know* about Caterpillar!

Caterpillar Tractor Co., Peoria, Illinois.

**CATERPILLAR***

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DIESEL ENGINES
TRACTORS • MOTOR GRADERS
EARTHMOVING EQUIPMENT

# Industrial Friction Materials For Modern Machinery

By TOM BELL
Assistant to the Vice-President
Thermoid Company, Trenton, N. J.

CONSTRUCTION machines and quarrying and sand-and-gravel equipment are bigger, faster, and more powerful today than ever before. The clutches and brakes required for power transmission and for speed control of today's giant earth movers and material-handling machinery of all kinds must be capable of higher performance. In achieving a streamlined appearance, designers now enclose brakes and clutches, causing them to run hotter than formerly, when circulating air accomplished more cooling.

No single friction material will meet all requirements. From a theoretical standpoint each application is different, and a special brake or clutch lining should be made to give the maximum performance on each type of job. This is, however, impractical from the manufacturing viewpoint and would be too expensive. But even with the standardization necessary for profitable operation, a very wide variety of industrial friction materials is available.

To meet the demands of users and equipment manufacturers for better friction materials, we have doubled the size of our research facilities to attack on many fronts the problem of making better friction materials. We have developed our own tailor-made component materials, such as special resins, for industrial friction materials. This enables us to meet exact specifications more precisely and more quickly than when we relied entirely on materials purchased on the open market.

**Definitions** A clutch may be defined as a friction mechanism which, when engaged, increases or maintains the rotating speed of the engaged member. A cluch may be a band or a shoe (either external or internal), a disc (either single or multiple), or a cone.

A brake decreases rotating speed when engaged or holds an engaging member at rest. A brake is usually either a band or a shoe (external or internal), but it may take the form of a disc or a cone. Stated more simply, a brake is used to arrest motion, while a clutch is used to transmit motion. In either case, the most critical problem is the absorption and dissipation of the heat which is created.

The desirable characteristics in any friction material are: (1) resistance to wear; (2) consistent performance; (3) high performance under wide ranges of temperature, moisture, and pressure; (4) freedom from noise, sparking, and disintegration; and (5) smooth operation.

**History** In the past speeds were low, and loads were light. The prime mover, usually a horse, was used to bring vehicles to a stop. On early freight wagons a heavy wooden stick was dragged on the ground to help control the speed of the vehicle. As time went on, better braking mechanisms were devised which brought a wooden block into rubbing contact with the wheel. But wood wears out fast and chars, gives erratic performance, and makes frequent replacement necessary. Other materials came into use, such as leather and various metals. As speeds increased and loads became heavier, the demand for better friction materials was intensified.

The first real brake lining as we know it today was a soft, flexible fabric impregnated with rubber. Repeated use compressed the lining and made frequent adjustments of the brake mechanism necessary to compensate for the reduced thickness.

**Ingredients** Chief among the ingredients of today's brake and clutch linings is asbestos because it resists disintegration by heat and possesses satisfactory wear and friction properties. It is easy to process by several methods and is plentiful at an economical price during normal times.

Various metals in particle form are also found in many friction compounds. Brass, lead, and zinc are commonly used. All these metals are sufficiently soft, so that they do not score cast iron and steel drums. They add, however, to the wear resistance of the lining, aid in heat dissipation, and help to break up the uniformity of the lining surface, so that "skin effects" are avoided.

Various fillers are used to increase the bulk of the lining. These are selected for heat resistance, good wearing qualities, and availability.

It is in the development of new resins for industrial friction materials that the greatest advances are being made at present. The thermosetting resins are the chief binder material; they are selected for heat resistance and wearing properties.

**Types of Brake Linings and Clutch Facings** *Wire Back* — Ingredients are mixed to a putty-like consistency. A continuous process imbeds the mixture in wire backing. The wire backing member serves two purposes: (1) during manufacturing it strengthens the formed but uncured stocks which would be difficult to handle otherwise; and (2) it increases the structural strength of the brake lining in service, provides greater resistance to the shearing action of the rivets, and aids in heat dissipation.

*Extruded Types*—This lining (Fig. 1) is manufactured by extruding a soft, plastic stock through a rectangular opening.

*Dry Mix*—This is the most widely used method of manufacture in the industry (Fig. 2). The ingredients are mixed in a dry state and formed into sheets by pressure and temperature.

*Thermo Blocks*—The compound is compressed by heat and pressure in individual molds.

*Woven Types*—Made from asbestos types, cloths, and yarns. In this large class are a number of materials of different compounds and different

Fig. 1—Extruded brake lining.

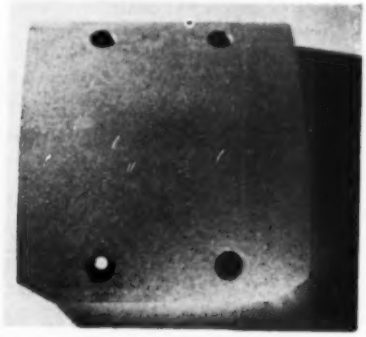


Fig. 2—Dry-mix brake block.

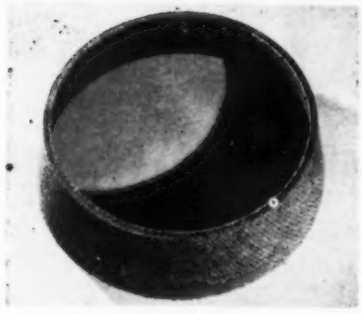


Fig. 3—Cone clutch facing.

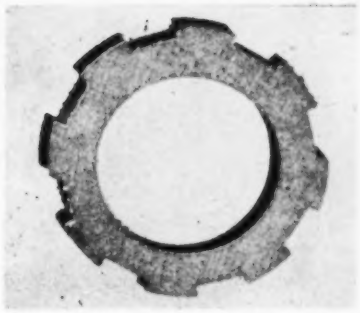


Fig. 4—Clutch facing for power takeoff on tractor.

Fig. 5—Gear-toothed clutch facing.

treatments. One popular type is made of asbestos yarn with a brass wire insert. The yarn is run through a bath of rubber, resins, and other ingredients. The impregnated yarn is dried and then woven into a disc on special machines.

*Dipped* — Special cotton duck is dipped in a liquid solution containing the necessary fillers, binders, and other ingredients.

Both brakes and clutches are available in the above types. It is to be understood that additional processing steps follow the brief outline given above, such as curing, baking, cutting and grinding to size, and drilling holes for fasteners.

**Sizes** Industrial friction materials are available in a wide range of dimensions. We generally do not make friction materials less than ⅛-in. thick. We have, however, for special jobs, made thinner brake and clutch linings. Although we do not usually make friction materials more than 48 in. wide, this can be done.

Friction material of almost unlimited length can be produced. Size is not often a serious limitation. Friction materials can be made for everything from washing machines and lawn mowers up to the huge 40-cu. yd. shovels and draglines used in strip mining coal and to fast, powerful, railroad locomotives.

It should be pointed out that the degree of curvature may be a troublesome factor. A small radius application is always more difficult to lick than a large one.

**Shapes** Most brake linings are furnished in short, curved segments. Variations from this standard include brake linings with a small transverse curvature. Another brake lining is made with a definite taper in thickness from one end to the other.

More variety is generally found in clutch facings. We make several varieties of cones (Fig. 3). Many of the flat clutch facings are slotted as well as drilled. Other applications call for projecting lugs or indentations (Fig. 4) to fit specific clutch mechanisms.

Clutch linings with integral teeth, either molded or machined into the inside or outside diameter, are fairly recent innovations. Thermoid gear tooth clutch facings of this type (Fig. 5) have the teeth molded into the lining.

**Temperatures** Although it is impossible to measure exactly the temperature of the brake lining and brake drum at the point of contact during operation, we have sufficient evidence from our physical testing laboratory to indicate that temperatures from 900 deg. F. to 1100 deg. F. are commonplace. Sometimes the part of the brake drum in contact with the brake lining reaches such high temperatures that the metal approaches a plastic phase, and the drum metal "smears". Temperatures high enough to cause color changes are common.

Considerations in addition to heat dissipation often make a compromise on brake size and construction necessary. A brake drum large enough to dissipate the heat adequately is often not in proportion to the machinery on which it is used. We accept the brake designer's word as law because he must fit the brake and clutch mechanisms into the space available on the complete machine. It is up to us, then, to come up with a lining that will do the job.

There are many new fields for friction material manufacturers to conquer. The advances in air transportation pose some intricate problems. Aircraft landing speeds and loads are increasing. Airfields are now getting much longer. Military aircraft with jet engines give a forecast of what we must meet when jet engines power commercial aircraft.

Surface transportation is faster. We are now being called on to supply brakes to stop automobiles at 100 m.p.h. in allowable distance with frequent applications of the brakes.

**Tough Applications** A power shovel company developed a two-faced clutch for which they asked us to develop friction segments. The applications were unusual in that they requested that the segments be easily removable, that they have good wear and heat resistant qualities, as well. A segment was developed (Fig. 6) with a slight radial taper enabling it to fit, without movement during operation, into the space provided.

An unusual use of a friction material for a non-friction application is found on high-speed passenger railroad cars. Excessive wear and noise occurred at the area of contact between the car and its trucks when metal plates were used. We supplied a friction material that stopped the noise and also contributed to riding comfort by eliminating excessive movement between car and trucks. Not only is the friction material cheaper but it outlasts the metal plates used previously.

**Recommendations** Here are some suggestions for getting the most out of your industrial material.

1. When a brake or clutch slips, do not throw foreign material, such as coal dust, rosin, Fuller's earth or sand, into the mechanism. The effect is only momentary, and whatever you put into the clutch will only cake up on the lining.
2. Keep oil and grease away from

(*Continued on page* 124)

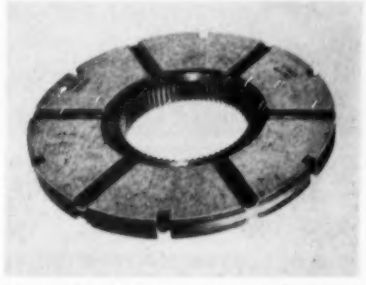


Fig. 6—Clutch facing segments for power shovel.

# "this NEW Cedarapids SUPER is the star performer

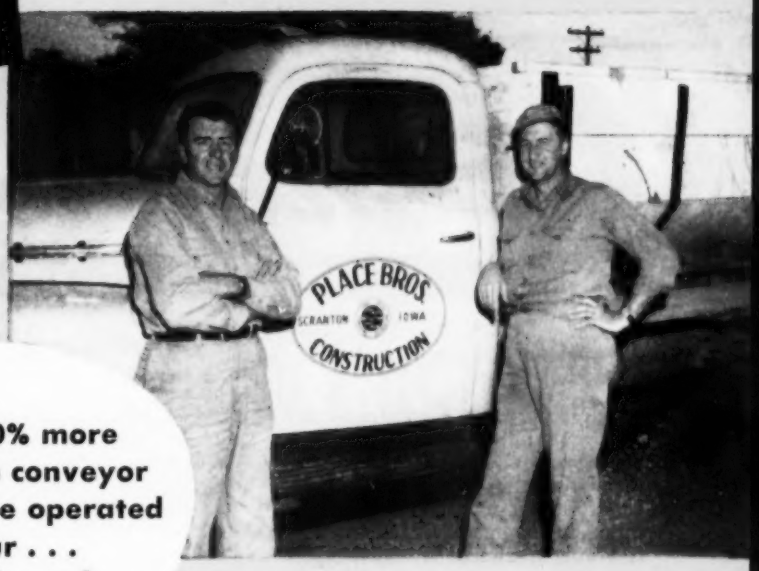
HERE'S the Cedarapids Super Tandem Gravel Plant *newly engineered* for star performance on jobs where gradation of a big volume of material is the most important of the plant operations. The Super Tandem is now built with a 48″ x 12′ Horizontal Vibrating Screen to give you the really high screening capacity that is a big advantage in any pit and is especially profitable where there's a high percentage of fines or contaminated material. Other Super Tandem features, like the 1036 jaw crusher, 2416 roll crusher and 30″ wide conveyors, are engineered to handle this extra capacity with no increase in operating or maintenance costs. See your Cedarapids distributor for complete details.

THE IOWA LINE *of Material Handling Equipment Includes:* ROCK AND GRAVEL CRUSHERS • BELT CONVEYORS • STEEL BINS • VIBRATOR AND REVOLVING SCREENS • UNITIZED ROCK AND GRAVEL PLANTS • FEEDERS • PORTABLE POWER CONVEYORS • PORTABLE AND STATIONARY STONE, GRAVEL AND SAND PLANTS • REDUCTION CRUSHERS • BATCH TYPE AND VOLUMETRIC TYPE ASPHALT PLANTS • DRIERS • DUST COLLECTORS HAMMERMILLS • WASHING PLANTS • VIBRATING SOIL COMPACTION UNITS • DOUBLE IMPELLER IMPACT BREAKERS

# TANDEM

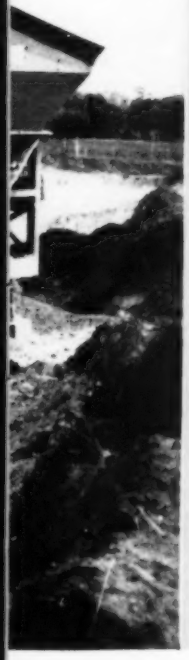
## for our jobs"

*Say the Place Brothers of Scranton, Iowa*




**"we're getting 100% more screening . . . 25% more conveyor than the Junior Tandem we operated . . . 228 to 310 tons per hour . . . steady operation day in and day out . . . very low maintenance . . . THAT'S PROFITABLE PERFORMANCE!"**

Burl Place (left) and LeRoy Place are producing ¾" minus crushed gravel to the tune of a 228-ton per hour average . . . with peak production hitting 3560 tons in an 11½-hour day! Average per cent of crush was 20% with portions of the material wet, with some clay. Burl Place says, "This new Super Tandem is very trouble-free and dependable. We can plan on operating at full 11½-hour day every day, weather permitting, and maintaining the high average production that keeps us ahead of our competition."



### "OUTSCREENS ANY OTHER SCREEN I'VE EVER SEEN," says LeRoy Place

"That big 48" x 12' horizontal screen is a humdinger for the kind of work we do . . . processing semi-wet material with a high percent of fines. For capacity alone, it outscreens any screen I've seen operate, and by reducing the circulating load, we have less wear on the crushers. Add the screen's trouble-free operation and the result is the extremely low maintenance, high capacity machine we need to operate a successful business in tough competition. Our maintenance cost runs less than ¾ of a cent per yard."

### HIGH FLEXIBILITY

The Super Tandem is designed to handle a wide range of crushing and screening conditions. Optional equipment which increases flexibility includes swivel feed conveyor, spray bar attachments and sand ejector screw. Cedarapids Primary Crushing Unit used ahead of the Super Tandem converts it into a high capacity rock plant. "Packaged" Super Tandem separate units are available for stationary operation.

### 30" WIDE CONVEYORS

As part of the new-design efficiency of the Super Tandem, the width of the delivery conveyors, plant conveyor and under crusher conveyor has been increased to 30" to handle the greater production of the plant.

The newly engineered Super Tandem is designed specifically to meet conditions where extra-high screening capacities are necessary . . . but *remember* . . .

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FOR BITUMINOUS MIXING, the big Cedarapids Model E is ready for profitable big-job production, or the Master Plant, Model FA or Model PM Commercial Size Plant are available to meet any quantity, any specification requirement.

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## Cedar Rapids, Iowa, U.S.A.

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- ☐ Bituminous Mixing Plants

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Company _____

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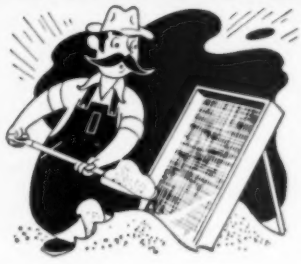
City _____ Zone _____ State _____

# Screenings



by William M. Avery

OUR Directory Department has just called attention to a flock of nomenclatural oddities which are to be found in PIT AND QUARRY'S 1953 listings of plants engaged in producing nonmetallic minerals. The following specimens are fairly representative.

At Grand Rapids, Mich., for example, G. J. Rocks owns and operates the Rocks Sand & Gravel Co., while at Martinsville, Ind., Ralph Sandy is shouldering the same burdens for the Sandy Gravel Co. At Warsaw, Ky., Sam Hill is operating Sam Hill's Gravel Co., and John Pitts is employed as quarry superintendent at the Fort Dodge, Iowa, plant of the National Gypsum Co.

By way of establishing the Major League character of our field, we would also like to point out that Bob Feller is superintendent of Industrial Silica Corporation's plant at Phalanx, Ohio, John Mize owns the John Mize Sand & Gravel Co. at Elnora, Ind., and Ben Hogan is a partner in the St. Francis Material Co., Forest City, Ark.

### Here's Mud in Your Truck!

WE knew things were pretty plush in the ready-mixed concrete industry, but a little item from Sunnyvale, Calif., makes the point about as effectively as anything we've seen. In celebrating the opening of

a new ready-mix plant, the owner had his wife bust a bottle of champagne on one of the truck mixers as the first load was batched out. Oh sure, we know they *make* champagne in California, but the name will still have a prosperous ring to it, even when they start peddling the stuff through coke machines.

### Yes, We Have No...

SOME while ago this department reported that a brick and tile manufacturer was turning out his product in such romantic hues as Valencia treebark, suntan, earth

blend, and banana. The last-named color must have a great deal of appeal, judging from the number of inquiry cards we've received from readers who want to know the details of the process. Like a flash we launched a broad research program which has to date established beyond a shadow of a doubt that the effect is *not* achieved by any technique involving the use of bananas.

### Prosperity Note

WE UNDERSTAND that the burglars who broke into the premises of the Columbia Concrete Company of Des Moines, Iowa, made off with five bottles of liquor and $2 in cash. Although we're delighted to note this convincing testimony to the prosperity of the concrete industry, it strikes us that *this* particular outfit may be straining a little too hard to maintain a liquid position.

### Banned in Boston

TWO recently-published novels, *Corpus of Joe Bailey*, by Oakley Hall, and *The Passionate Land*, by Geoffrey Wagner, merit some attention from this department because their characters become involved, in one way or another, with important branches of the pit-and-quarry industries. The first item, which makes some of the racier passages of the recent Kinsey report sound like paragraphs from McGuffey's reader, devotes several chapters to the main character's brave struggles to become a successful truck dispatcher for a West Coast ready-mixed-concrete firm. Background and atmosphere are pretty authentic, although the impression is created that only a guy who is a cross between Jack the Giant Killer and Richard the Lionhearted stands even a fair chance of making the grade as a truck dispatcher. The author may have a valid point at that!

*The Passionate Land*, to quote the *New York Times Book Review*, "concerns itself with a secret organization, The Pilgrims of Peace, whose aim is to seize political power and whose fanatical followers utilize the natives' hatred of foreigners as a prime lever in carrying out their plans. An American girl, cast as a starry-eyed liberal, becomes the mistress of a Mexican mural painter, who is on the list of those to be purged. The British ambassador is stabbed in his sleep; a young Welsh widow gets amorously involved with an ex-Pilgrim, and the two business men plot to reap enormous profits from cement factories." We can't see that it matters a great deal, but these languid activities all take place in Mexico. If a high enough percentage of our eight readers should insist, we will seek permission to reprint these scholarly works serially on this page. Since neither of the books is much longer than the current issue of the Sears Roebuck catalog, we don't see why we can't polish off the whole job in approximately 60 years.

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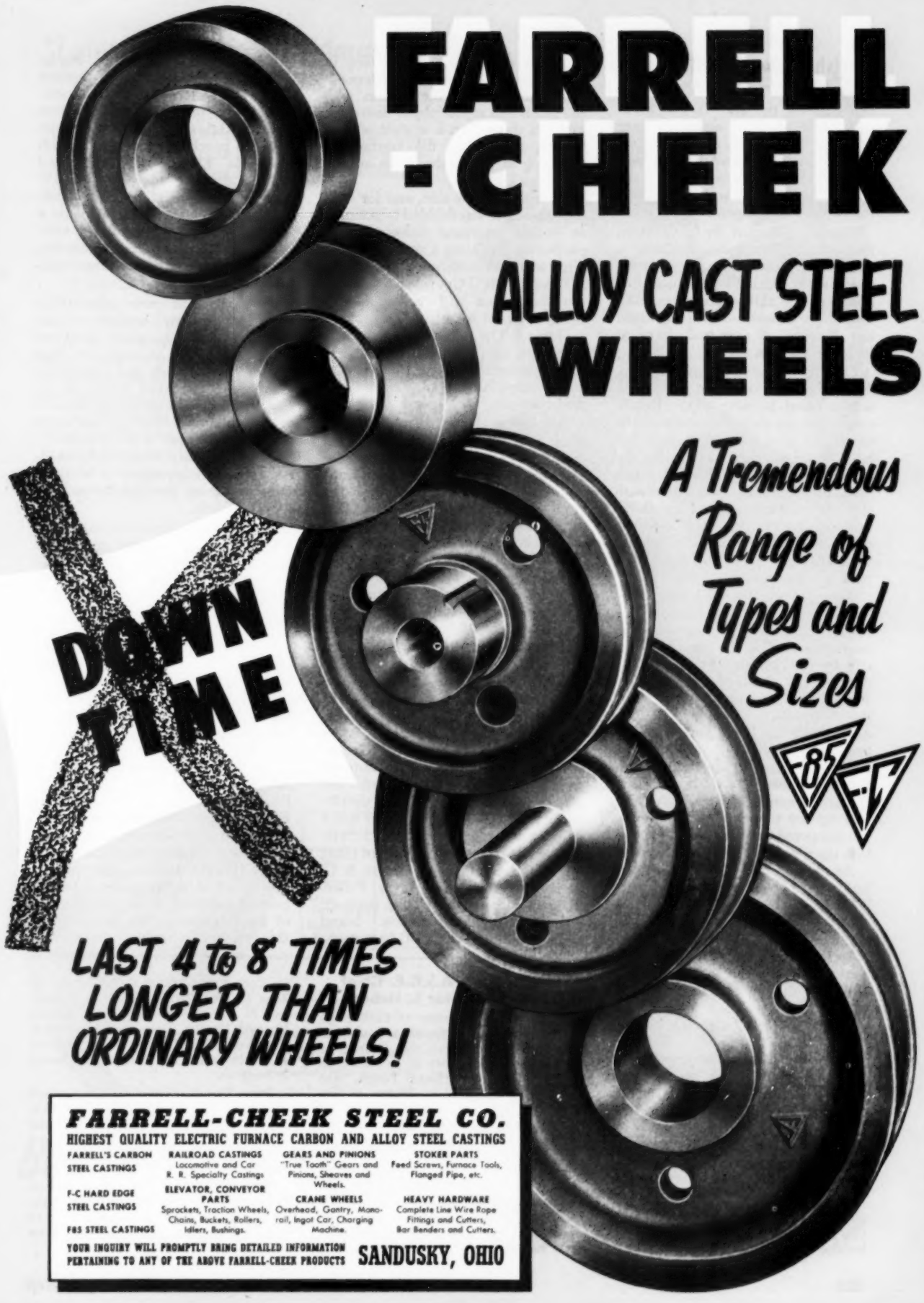


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## British Columbia Cement

(*From page 89*)

kiln high in the air. It also eliminated the need to elevate clinker over the 30-ft. walls of the clinker-storage. A Stephens-Adamson natural-frequency conveyor handles the clinker from the new kiln between the cooler and conveyor.

Dust is collected by a Western Precipitation Multiclone installation and returned directly to the kiln with the slurry through a vortex basin just ahead of the slurry feed pipe. The feed pipe is water-cooled to avoid any "baking" of dust and slurry on its inside surface.

Coal is ground in a Raymond No. 533 pulverizer and fired through a water-cooled burning pipe. Instrumentation parallels the system on the three old kilns, except that it has been found impractical to utilize the automatic hood-draft control previously mentioned in conjunction with the Fuller cooler since the bed thickness on the grates varies and produces changes in hood-draft conditions that are unrelated to the volume of air entering the kiln.

Although the discharge end of the cooler is fitted with a hammer-mill clinker breaker, the dust which is usually created at this point has been effectively controlled by installing a duct, 6- by 9-ft. in cross section and 30 ft. long, between the cooler and the 8- by 50-ft. cooler stack. This duct, which has three hoppered outlets, acts as an efficient settling chamber; so the stack rarely shows any trace of dust. Collected dust discharges automatically through counterweighted valves at the bottom of the hoppered sections directly to the belt carrying the clinker to storage.

At present, the most efficient output from the new kiln appears to be 2,700 bbl. (Canadian) per day, although production as high as 3,100 bbl. has been attained, but with increased fuel consumption and greater dust losses.

One of the largest expenditures of the expansion program has been the new 250,000-bbl. capacity clinker-storage building. It is 90 ft. wide and 220 ft. long and has buttressed, reinforced-concrete walls 30 ft. high which support the steel roof structure and the craneway. The crane carries a 3½-cu. yd. Blaw-Knox bucket and has a bridge-traveling speed of 450 f.p.m. and a hoisting speed of 200 f.p.m. It is operated two shifts daily to distribute and reclaim clinker. The structure was erected in the area formerly occupied by the old crushing plant, some 200 ft. from the coolers. Therefore it was necessary to install a system of conveyors between the coolers and the finish end of the plant. Incorporated in the system is a scale with a by-pass permitting the continuous weighing of the clinker from any or all of the kilns.

As with the raw side, and for similar reasons, it was decided to attempt to obtain increased finish-grinding output by providing a very fine feed. This was accomplished by installing a Telsmith 48FC Gyrasphere crusher, closed-circuited with a screen and belts, adjacent to the clinker-storage building. The screened product is minus ⅜ in. This fineness of feed has increased finished-grinding capacity some 20 percent, the management reports.

Altogether, 11 belt-conveyors with a combined length of 816 ft. are used to convey clinker, closed-circuit the clinker crusher, and return the minus ⅜-in. product to the bins above the finish-mill. Adding these to the 1,253 ft. of raw-material belts and 826 ft. of coal belts gives a total of 2,895 ft. of belt conveyors installed during the last eight years. It is noteworthy that, despite the hillside location and the necessity of carrying from lower to higher elevations, the use of elevators has been avoided.

Finished-cement storage has been increased and can now accommodate 180,000 bbl. Four steel tanks precede the storage silos to cool the cement prior to storage and packing. Three St. Regis packers bag most of the output, although increasing amounts are being barged in bulk across the straits to Vancouver, B. C., distributing plants. Bulk shipments by water also are being made this year directly to Alcan's huge new aluminum plant under construction at Kitimat, B. C. Bulk barges are loaded by Fuller-Kinyon system; the sacked product, marketed under the "Elk" brand name, is palleted in 50-bag stacks and handled by Towmotor trucks. Gypsum comes from the Windermere deposits in eastern British Columbia.

Water is piped by gravity from mountain lakes high above the plant. Power is purchased from the British Columbia Electric Company and stepped down from 60,000 to 550 volts at the plant. The many additions to the plant equipment made it necessary to revamp the entire electrical distribution system, including the installation of three new transformer stations.

A modernistic new plant-office building, recently erected on an eminence above the plant, looks out over a thrilling seascape of blue waters, green islands, and peninsulas. Glareproof plateglass forms an almost continuous wall on the east side of the building overlooking the water and mountains far in the distance.

The laboratory is also being modernized and re-equipped to bring its facilities up to the highest present-day standards.

Plans for the future include three 30- by 90-ft. silos at one end of the clinker-storage building which will be used to store iron ore and silica sand for the production of Type II cement. Primary attention is also to be focused on dust elimination, not only at the kiln stacks but at all points of emanation within the plant.

All plant design and construction projects have been carried out under the supervision of company personnel. Executive and sales offices are housed in the company's own building in downtown Victoria. President and general manager is N. A. Tomlin. R. E. Haskins is works manager; F. A. DeLisle, chief chemist; R. C. Muirhead, mechanical supervisor; and Allan Soulsby, technical supervisor. To Mr. Haskins, particularly, the writer is highly grateful for his patient assistance in supplying much of the interesting data contained in this article.

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## Terrell Elected A.S.C.E. Chief To Succeed Walter L. Huber

The American Society of Civil Engineers has announced the election of Dean Daniel V. Terrell of the College of Engineering, University of Kentucky, as A.S.C.E. president. Dean Terrell, who will succeed Walter L. Huber of San Francisco, was installed on October 21 at the society's annual meeting in New York. He will serve one year.

Two vice-presidents and six directors were also elected in a mail ballot of the more than 36,000 members. They were inducted into office at the October convention. Vice-presidents are elected for two years and directors for three. The new vice-presidents are Enoch R. Needles for Zone 1 and Mason G. Lockwood for Zone 4. Mr. Needles, who lives in Summit, N. J., is a member of the firm of Howard, Needles, Tammen & Bergendoff, New York. Mr. Lockwood is a member of the Houston, Tex., firm of Lockwood & Andrews.

Dean Terrell, formerly a director and a vice-president of the American Society of Civil Engineers, has been on the faculty for 40 years. Since 1946 he has been dean of the College of Engineering and director of the Engineering Experiment Station at the University. For almost four decades he has been prominent in highway engineering research. Since 1942 he has been director of the Kentucky State Highway Research Laboratory.

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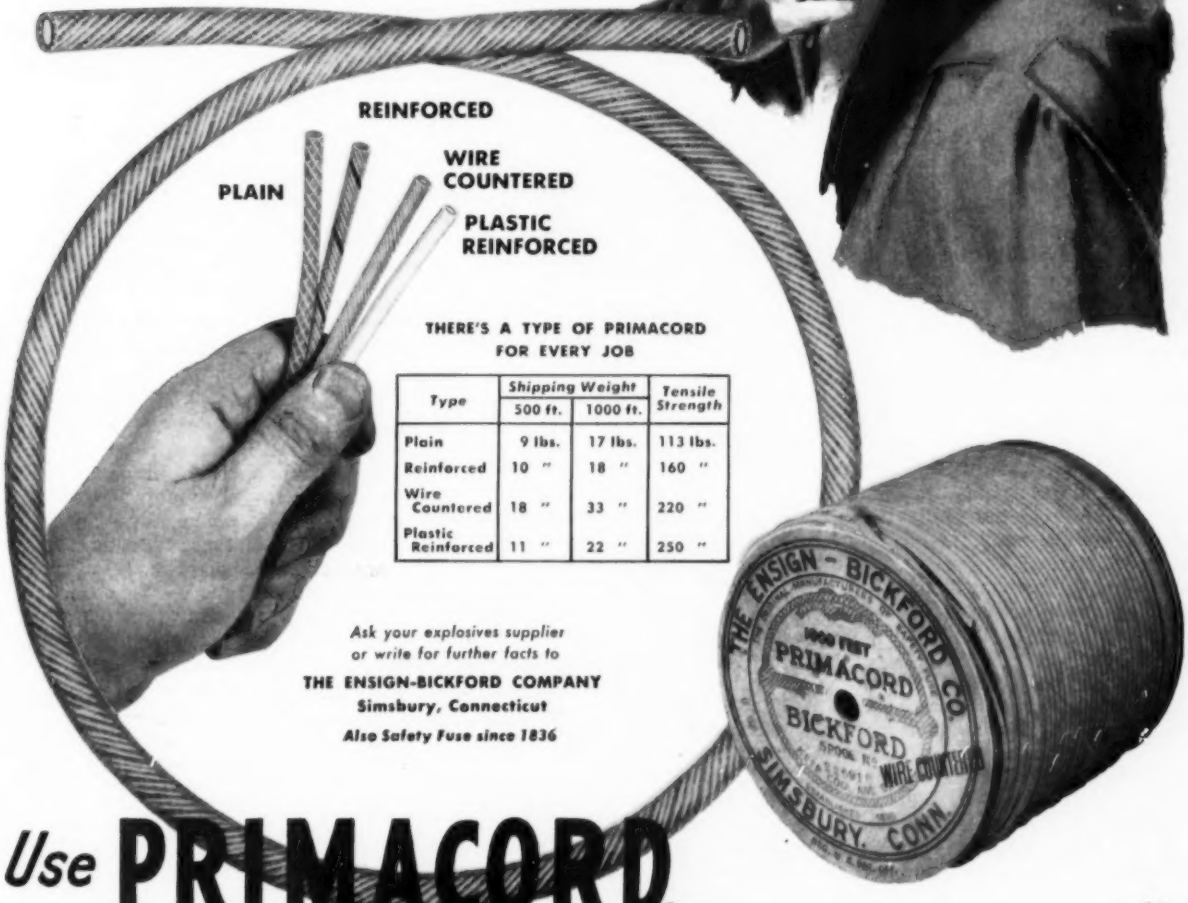


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# Report on Current Labor Developments

By S. HERBERT UNTERBERGER
S. Herbert Unterberger & Company
Industrial & Labor Economists
Washington, D.C. - Philadelphia, Pa.

## Union Violates No-Strike Pledge

THE "new look" on the National Labor Relations Board, resulting from the recent vacancies filled by President Eisenhower appointees, is already noticeable.

In a recent case in which the union used the harassing tactic of calling a meeting during working hours, the N.L.R.B. upheld the employer's contention that this action was in fact a strike, called in violation of a no-strike pledge found in the agreement and that therefore it breached the agreement and cancelled it.

The facts are as follows. During the term of an agreement which included a no-strike clause the employer and the union could not reach agreement with respect to the remaining two cents of a wage increase provided for in the contract. The union called a full membership meeting at a specified time during the regular first shift working hours unless the employer granted the demands prior to that time. This threat did not produce the hoped-for result; and when the time came, the employees stopped work, left the plant, and went to the union meeting.

Approximately 40 minutes later the plant gates were locked and the watchmen were instructed not to admit any of the plant employees. The next day the employer sent a letter to all its employees informing them that it was discharging all participants in the strike. Four days later he advertised in the local newspaper and on the radio that he was hiring new employees. Two days thereafter he sent a letter to all plant employees and to the union, stating that he was cancelling the contract with the union and his recognition of that union, and asking the employees to apply for work stating, ". . . You should know that unfortunately this union action forces us to consider everyone who is rehired to be a new employee."

The National Labor Relations Board upheld the employer in all of these actions. It even reversed its trial examiner's compromise recommendation that would have required reinstatement with back pay of about 10 percent of the employees who did not participate in the illegal walkout because they were not at work at the time. The N.L.R.B. called their absence "fortuitous" but regarded them to be no less involved in it since, although they were on notice that they were discharged, none of them took any specific action to disassociate themselves from the walkout. The Board even found that those who appeared at the gate offering to work were only engaging in a "tactical maneuver".

Of even greater importance in the long run is the fact that the Board permitted the employer's cancellation of the contract and withdrawal of recognition to stand unchallenged. In effect, this permitted the replacement of the violating union by another union immediately. The Board would therefore be prepared to facilitate this process by holding a representation election.

It is only fair to point out that the union involved in this case was one of those which had been thrown out of the C.I.O. because of its Communist domination. While there is no evidence that, as a result, the N.L.R.B. was particularly rough on the union, it may be assumed that no special leniency was shown and that its elimination as the bargaining agent was not especially mourned. Nevertheless, the principle of applying full sanctions to the party who violates any provision of a labor agreement has been further reenforced.

## Premium Pay for Week-end Work

A recent study by the Bureau of Labor Statistics shows that 48 percent of the labor agreements covering 39 percent of the workers provide premium pay for work performed on Saturday and that 70 percent of the labor agreements covering 64 percent of the workers provide premium pay for work performed on Sunday.

Of special importance is the very wide difference among the various industries in the prevalence of these premium pay practices. As may be seen from the following table, among manufacturing industries the proportion of agreements providing premium pay for Saturday ranges from 86 percent in the fabricated metal products industry down to 15 percent in the petroleum and coal products industry; among non-manufacturing industries it falls as low as 5 percent in hotels and restaurants. Similarly, the proportion of agreements providing premium pay for Sunday work ranges among manufacturing industries from 94 percent for transportation equipment down to 12 percent for apparel: among non-manufacturing industries it falls again to as low as 5 percent in hotels and restaurants.

| Industry Group | Percent of Contracts Providing Premium Pay on Saturday | Sunday |
|---|---|---|
| All Industries | 47.7 | 69.8 |
| Manufacturing | 57.9 | 73.8 |
| Food and kindred products | 31.4 | 71.1 |
| Tobacco | 42.9 | 78.6 |
| Textile mill products | 57.3 | 57.2 |
| Apparel | 31.6 | 12.3 |
| Lumber | 34.4 | 62.5 |
| Furniture | 74.3 | 77.2 |
| Paper | 38.6 | 91.2 |
| Printing and publishing | 52.6 | 70.2 |
| Chemicals | 49.1 | 58.2 |
| Petroleum an coal products | 15.0 | 30.0 |
| Rubber | 33.3 | 83.3 |
| Leather | 46.4 | 57.2 |
| Stone, clay, glass | 24.5 | 71.4 |
| Primary metal industries | 55.4 | 75.0 |
| Fabricated metal products | 86.1 | 87.2 |
| Machinery (except electrical) | 82.1 | 91.1 |
| Electrical machinery | 79.4 | 96.2 |
| Transportation equipment | 80.0 | 93.7 |
| Instruments | 68.2 | 90.9 |
| Non-manufacturing | 22.7 | 60.2 |
| Mining, crude petroleum, natural gas | 17.9 | 39.3 |
| Transportation | 25.0 | 50.0 |
| Communications | 5.3 | 86.0 |
| Utilities–electric, gas | 7.3 | 53.7 |
| Who'esale trade | 34.3 | 80.0 |
| Retail trade | 6.2 | 65.4 |
| Hotels and restaurants | 5.0 | 5.0 |
| Services | 27.3 | 51.5 |
| Construction | 82.2 | 88.9 |

The premium rate paid for Saturday work is time and one-half in about 90 percent of the contracts, double time in about 5 percent of them, and a variety of other provisions in the remaining 5 percent. The premium rate paid for Sunday work is less uniform. It is time and one-half in 21 percent of the contracts, double time in 72 percent of them, and a variety of other provisions in the remaining 7 percent.

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According to R. W. Deneke, manager of the U. S. Gypsum Company's operation at Heath, Mont., the company is enlarging its facilities there. Work on a two-story structure began in July and is scheduled for completion this fall.

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North American Cement Corporation reported for the 12 months ended June 30, 1953, net income of $916,983 ($2.96 per common share), against $903,647 ($2.92 per share) in the corresponding period of 1952.

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## McNutt Mobile Setup

(*From page* 109)

building Dexter Dam. The Dexter project is located a few miles below the Corps of Engineers Lookout Point Dam (See PIT AND QUARRY, Aug., 1952) and is designed to serve as a regulating structure for the main dam upstream.

As set up under the direction of Superintendent E. H. Olson, the Pioneer equipment is calculated to produce at the rate of 200 to 225 t.p.h. To meet the specifications, and because there is a deficiency of fine sand, an initial attempt is being made to grind sand with the Pioneer 40- by 22-in. triple-rolls. Should this prove insufficient, Mr. Olson plans to install a rod-mill in the circuit.

A new sand department was purchased and erected when the Dexter Dam plant was set up. Included on the structure are new Pioneer screens, Eagle settling tanks, and Eagle screw classifiers. The job is expected to be completed before the end of 1953.

In the pit at Dexter, a Lima shovel excavates the material and loads the LeTourneau Carryalls for delivery to the plant hopper about 100 yd. distant.

## Natl. Slag Meeting

(*From page* 111)

slag in rapid trickling filters for industrial plant wastes. Slag appears to offer promising results in this type of service because of its rough surfaces. An investigation of the subject is under consideration, and Mr. Bauman disclosed that the slag industry has been asked to help finance the necessary research work. In the subsequent discussion the following points were brought out: the required material must be clean and closely graded; it is hard to make, but would probably command a premium price; the potential tonnage is considerable. At the conclusion of this discussion the meeting voted to authorize the financial participation of the National Slag Association in a three-year research program being undertaken by the Trickling Filter Flow Institute.

In concluding his remarks, Mr. Bauman announced that association headquarters will soon be moved to a new building in Washington. He said that the new quarters will provide meeting room space for various committees, and he expressed the view that the facilities would reflect favorably upon the association.

As a final item of business, the directors of the association gave consideration to the time and place of the 1954 annual meeting. It was tentatively decided to hold this gathering in Washington, D. C., late in October, but a definite decision will be made before the proposed date.

## Friction Materials

(*From page* 115)

friction material. The first effect will be to lubricate and decrease the co-efficient of friction.

3. Protect friction materials against direct contact with water.

4. Be sure the brake or clutch mechanism itself is properly adjusted and in proper working condition.

5. Make sure the drum is running true and that the braking surface is smooth and even.

6. Give proper attention to the installation to save headaches later. Check the lining for good fit against the drum. It should be in contact throughout its length and especially in the center. Avoid a "heel and toe" contact.

7. Use rivets and other fasteners in sufficient size and number to prevent shearing during application. Fasteners should be drawn tight, so that absolutely no movement of the lining is possible during application. Loose rivets permit movement, produce squeal and chatter, and will eventually shear. Most linings are supplied with rivet holes counterbored, so that rivet heads are sunk below the working surface of the lining.

8. Select the correct material for the job. You'll have trouble with a light-duty lining in a heavy-duty application. Don't pay for heavy-duty material in a light-duty application. Determine the temperature range expected and specify a lining that will stand up under that temperature.

**Trouble Shooting** Use this check-list to determine the reasons for failure.

1. *Rapid wear* — lining running too hot. Specify higher temperature lining. Cool by external means, such as fans.

2. *Heat checking*—mechanism operating too hot.

3. *Scoring of drums* — loose or projecting rivets or bolts; sand and other abrasive material falling between lining and drum; improper, unequal adjustment. To correct, replace rivets or tighten bolts; remove sand and other foreign materials; and readjust lining and drum for equal wear. The scored drum must be machined or sanded smooth before resuming operations.

4. *Lack of holding power*—looseness or failure in actuating mechanism; band not in full contact with drum; incorrect lining with coefficient of friction too low.

5. *Steel or iron particles in lining* —caused by excessive heat. Either improper material is being used, or only a part of the area of the brake is taking the whole load. Drum metal becomes brittle, pieces break off and become imbedded in lining; drum is scored. It is impossible to remove steel particles. Machine drum to remove score marks; replace lining and take measures to cool drum operation.

6. *Grabbing* — pressure on lining too high; lining has too high a co-efficient of friction for the application; high spots in lining caused by improper adjustment.

7. *Lining separates from band*— usually preceded by loose lining. Looseness increases until movement of lining relative to band is enough to cause rivets to shear. Sometimes caused by too few rivets. Linings too soft for the service expected, permitting rivet holes to enlarge until lining becomes loose and finally completely detached. Replace lining if damaged. Be sure that the rivets fit holes tightly and are driven in to hold the lining tightly against the band.

8. *Chatter* — caused by unequal pressure or loose lining. Projecting rivet heads also can cause chatter.

## Robins Predicts Rosy Future For Belt Conveyor Industry

Thomas Robins, who pioneered the development of the belt conveyor in 1891, predicted on his 85th birthday that the conveyor industry will grow faster in the next 50 years than it has in the last half century.

Mr. Robins conceived the idea for the modern belt conveyor in 1891 when, as a salesman, he called at the Ogden Iron Mills in Northern New Jersey, owned by Thomas A. Edison. He observed that the operators were attempting to move ore on a primitive belt, made chiefly of canvas, which wore out fast and spilled much ore as it jogged along. Robins investigated the problem and, after extensive experiments, developed a belt with a tough rubber cover that would withstand the cutting and abrasion of sharp lumps of ore. In addition, he designed belt rollers (now called idlers) that formed a trough to keep the ore from spilling off the sides. These two basic developments still remain the foundation of the belt conveyor.

Mr. Robins founded the Robins Conveying Belt Company in 1896 with an investment of $1,000. This company was merged with the Hewitt Rubber Company in 1945 to form Hewitt-Robins, Inc., of which his son, Thomas Robins Jr., is president.

### Talc and Allied Products Lower in Volume, Up in Value

Mine production of talc, pyrophyllite, and ground soapstone in the United States decreased 6 percent in quantity (to 600,908 short tons) in 1952 from the record high production of 1951, according to reports by producers to the U. S. Bureau of Mines. Pyrophyllite production was 5 percent greater than in the previous year. The quantity of these commodities sold by producers decreased 7 percent, but increased in value to $11,347,317, a new high.

Most of the talc, pyrophyllite, and soapstone is ground by the producers before it enters the trade, although some consumers buy crude material and grind it to the desired specifications in their own mills. Some producers sell crude material to grinders. The figures have been revised to show the proportion of material that enters the trade in crude and ground form, rather than the proportion of each grade sold by the primary producers, as was done in previous years.

As in 1951, New York, California, and North Carolina ranked first, second, and third, respectively, in production and sales of talc, pyrophyllite, and ground soapstone in 1952. Pyrophyllite was reported from North Carolina, the major producing state, and California.

Six industries—ceramics, paint, insecticides, rubber, roofing, and paper—consumed 83 percent of the domestic production of talc, pyrophyllite, and ground soapstone in 1952.

Total imports of talc, pyrophyllite, and ground soapstone were about the same in quantity, but higher in value in 1952 than in 1951. Exports were about the same in quantity, but lower in value.

### Review and Directory Issued On Research in Engineering

A recent publication of the Engineering College Research Council, American Society for Engineering Education, is the *Review of Current Research and Directory of Member Institutions* for 1953. The book, which is published biennially, includes 103 institutions and reports on approximately 7,500 research projects. There are approximately 5,000 entries of project subjects in the index.

Other information (in addition to current research project titles) includes the following: names of responsible administrative officers; policies governing research projects and contracts; personnel engaged in research activities; annual expenditures for such projects; sources of income for research; and special conferences and short courses of interest to research workers. Published at State College, Pa. Price, $2.50 per copy.

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Featured in the current "Industry on Parade" TV series was Ideal Cement Company's farm rebuilding program, which is now being carried out on the firm's farm units of several thousand acres near the Boettcher, Colo., plant. The film will be shown over nearly 100 stations in this country and in Hawaii, and also in several foreign countries.


"This Athey HiLoader got us out of a jam!"

—reports
T. P. GRIGGS, Supt.
Franklin Limestone Co.
Nashville, Kentucky

When their loading shovel broke down, the Franklin Limestone Co. faced a crisis. Several contractors were depending on the stone from this pit for their work.

T. P. Griggs, Superintendent of the operation, saw an answer in the Athey HiLoader, normally used for loading sand.

The HiLoader crossed the pit and went right to work loading rock. In three minutes, the HiLoader had loaded four 7-ton trucks! The HiLoader's swivel conveyor eliminated the need for precise spotting and in a few minutes, all waiting trucks were loaded. Normal time for loading a 7-ton truck with the shovel was four minutes—4 times longer than with the HiLoader!

Mr. Griggs says, "Our HiLoader really got us out of a jam. Fast loading and travel speeds enabled it to handle regular sand jobs and then run to the other side of the pit to load rock."

The HiLoader can get your production out of a jam, too, and your Athey-Caterpillar Dealer can show you how and why. Ask him for a demonstration or write direct.

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I'd like to see what an Athey HiLoader can do in our pit operations.

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# American, Canadian Institutes Of Mining Hold Joint Meeting On Cape Breton Island

THE first joint meeting of the Industrial Minerals Divisions of the American Institute of Mining and Metallurgical Engineers and of the Canadian Institute of Mining and Metallurgy was held September 8 to 12 at Keltic Lodge, in Cape Breton Highlands National Park, Nova Scotia. The Mining Society of Nova Scotia was host to the two institutes. Delegates from the United States and Canada numbered 200, and many were accompanied by their wives. A program of sporting events and tours to industrial minerals plants, perfect weather in a setting of singular beauty, and a most generous social program all contributed to the success of the meeting.

Among the prominent persons attending were the Honorable A. H. MacKinnon, minister of mines for Nova Scotia; Andrew Fletcher, president of the American Institute of Mining and Metallurgical Engineers; A. E. Flynn, president of the Canadian Institute of Mining and Metallurgy; and R. Charlick, president of the Mining Society of Nova Scotia.

The inaugural luncheon was held at the Isle Royale Hotel in Sydney on September 8, after visits to the slag processing plant and coal mines of Dominion Steel and Coal Corporation, Limited. In the afternoon the delegates motored to Keltic Lodge, where the technical sessions were held.

One of Canada's finest golf courses, in the Park adjacent to the Lodge, was not neglected by the golfing enthusiasts. A golf tournament was one of the items on the sports program, along with tennis, quoits, and archery. Time off from the technical sessions was taken to visit the large gypsum mining operations of the National Gypsum Company (Canada) Limited at Dingwall near the northern tip of Cape Breton Island. A program of entertainment was also arranged for the ladies.

At the technical sessions 14 papers dealing with industrial minerals were presented by specialists in their respective spheres of knowledge. After the technical sessions the venue of the meeting was transferred to Antigonish, where on September 12 at a special convocation of St. Francis Xavier University, honorary degrees were conferred upon Andrew Fletcher, A.I.M.E. president, Harold Bannerman, chairman of the Industrial Minerals Division of the A.I.M.E., and on Walter Bell, director of the Geological Survey of Canada.

In the evening the delegates enjoyed a banquet tendered by the Government of Nova Scotia, at which the Honorable A. H. McKinnon, minister of mines for the province, was chairman, and Monsignor P. J. Nicholson, president of St. Francis Xavier University, was the speaker.

On September 13 at Halifax the party had a choice of visiting the barite mining operations of Canadian Industrial Minerals Limited at Walton or of going for a sail on Halifax harbor on a ship of the Royal Canadian Navy. On that evening a lobster dinner at the Shore Club at Hubbard's on the shore of the Atlantic ended the joint meeting. Hearty votes of thanks were tendered to the Mining Society of Nova Scotia by the Industrial Minerals Divisions of both the A.I.M.E. and the C.I.M.

Summaries of some of the technical papers available for abstracting at the time of the meeting follow.

J. R. Donald, president, J. T. Donald and Company, Montreal, in the opening sentence of his paper, "Industrial Minerals in the Chemical Industry," said, "Although I have spent the greater part of my life in the field of industrial chemistry, I had never before considered the obvious fact that without industrial minerals there could be no chemical industry." The most important primary chemicals, he said, are those derived from sulphur and salt, and the intrusion of the chemical industry into the fields of textiles, plastics, and detergents and the creation of the new petro-chemical industry have not decreased the importance of these basic chemical products.

The salt chemicals—caustic soda, soda ash, chlorine, and muriatic acid — are also fundamental to modern chemical industry. The growth of the caustic soda-chlorine industry in the last decade has been phenomenal.

The fertilizer industry is one of the largest segments of chemical industry and consumes large quantities of phosphate rock, sulphuric acid, and potash. Electro-chemical industries are large consumers of industrial minerals; limestone for calcium carbide; bauxite, fluorspar, and cryolite for aluminum; magnesite, dolomite, and brucite for magnesium; silica for ferro-silicon; salt for chlorates and perchlorates; and phosphate rock for elemental phosphorus. Canada's great water power resources have led to the establishment of a large electro-chemical industry.

Secondary chemical industries are hardly less dependent. There would be no paint industry without mineral pigments and additives. Sugar refinery requires phosphoric acid and lime. The detergent industry has always been dependent upon salt chemicals; and the new synthetic detergent industry is a large user of phosphorous compounds. Viscose rayon has created a large demand for caustic soda, chlorine, sulphuric acid, and carbon bisulphide, first for the processing of alpha cellulose, and second in the manufacture of the viscose fiber. Many chemical products are derived from industrial minerals: hydrofluoric acid from fluorspar; chromates from chrome ores; magnesia from brucite, dolomite, and magnesite; lithium salts from lithium mica; fillers for plastics, and so on. The position can be summed up by saying that the expansion of chemical industry is creating an increased and diversified demand for industrial minerals.

Ian Campbell, professor of petrology, California Institute of Technology, presented a paper entitled "Petrology and the Industrial Minerals," in which he brought out the ways in which the petrologist could aid the producer of industrial minerals. For instance, the size and shape of the mineral grains in an igneous rock determine something of the environment of its formation, and from this some prediction of the probable size of the body can be made. Also, a study of the size and shape of the mineral grains indicates to what size the rock must be crushed to unlock the individual minerals, and in addition may indicate the origin of the rock and give a lead as to its utilization. Thus talc that has resulted from replacement of equant grains of dolomite may be best suited for use as "electrical talc", whereas talc resulting from

replacement of acicular grains of tremolite may be best suited for use in paints. Mastery of hydrothermal techniques in phase equilibrium studies promises the development of certain minerals by synthesis.

Dr. Campbell predicted that the increasingly rapid exhaustion of natural mineral deposits of high quality will eventually force the utilization of igneous rocks as "the lowest common denominator", and inasmuch as we must look to atomic sources for our ever-increasing energy requirements, and as the average igneous rock contains 4 parts per 1,000,000 of uranium and 12 of thorium, the day will come—sooner than we think—when we will be using granite for fuel. It is not too soon, he said, for the petrologist and the industrial mineralogist to institute a broad program of research on igneous rock as a source of our fuel, of our metals, and of our industrial minerals of the future.

In his paper "The Geology of Nova Scotia Gypsum", N. R. Goodman, department of geology, Dalhousie University, set forth his views on the origin and correlation of calcium sulphate deposits. The gypsum beds themselves present little evidence to aid in their correlation, but the associated anhydrite possesses certain characteristics that are of use in that connection. Marine limestones interbedded with the calcium sulphate would seem to indicate that the latter was precipitated from sea water, and laboratory experiments show that calcium sulphate can be deposited as gypsum, as anhydrite, or as the hemi-hydrate. Field evidence leaves no doubt but that anhydrite was the original form and later was altered to gypsum.

The calcium sulphate beds have been greatly deformed by the mountain-building agencies which have affected the rock of all the major geological systems in Nova Scotia. There is much evidence that the bulk of the gypsum was formed prior to deformation and that the anhydrite in its present form is not readily susceptible to alteration. Laboratory experiments have given a clue to the mechanics of hydration and suggest that possibly connate waters, trapped in the upper horizons, altered the anhydrite relatively soon after deposition.

"Mining of Nova Scotia Gypsum", a paper by C. B. Hume, National Gypsum Company (Canada) Limited, Dingwall, N. S., gave an account of the methods used in the gypsum industry of the province. Nova Scotia's present yearly production of about 3,000,000 tons is approximately 90 percent of the Canadian output and supplies about 40 percent of the gypsum used in the United States. It represents about one-sixth of the annual production of the world.

All of the gypsum produced comes from open quarries and is recovered by many types of modern machinery. Large vessels, some of which are specially designed, transport the mined rock to its markets along the eastern seaboard of the United States. The record of the industry has been one of steady improvement in methods, with the result that costs have been controlled and the industry has continually expanded.

Inasmuch as the single item of transportation is by far the most important, it is essential that improvements in methods continue as the coastal deposits are depleted and operations have to be moved inland, involving overland transportation to tidewater. In conclusion, Mr. Hume said it was not too early to give serious thought to the possibilities of mining gypsum by underground methods in Nova Scotia.

In "Fluorspar Resources of Newfoundland", G. F. Carr of the Industrial Minerals Division, Mines Branch, Ottawa, described the fluorspar industry of Canada's youngest province. The industry there was established in 1932 and centers around the town of St. Lawrence on the Burin peninsula on the south coast of the province. There are two producers—St. Lawrence Corporation of Newfoundland Limited, and Newfoundland Fluorspar Limited. The production in 1952 amounted to 82,503 tons, valued at $2,473,167. St. Lawrence Corporation produces a coarse metallurgical grade and an acid-grade flotation concentrate. Newfoundland Fluorspar produces a metallurgical grade by heavy-media separation. The production is shipped for use in the production of aluminum by the Bayer process for use in steel mills and in the chemical and ceramic industries.

The Newfoundland reserves of fluorspar can be classed as among the most important in the world. Over two dozen veins have been found, and none has yet been either bottomed or traced to its end longitudinally. Some veins have been traced for three miles. The veins are mostly steeply dipping and are up to 40 ft. in width. The higher-grade veins average between 4 and 5 ft. in width and have a calcium fluoride content of at least 95 percent. The low-grade veins average between 15 and 20 ft. in width and have a calcium fluoride content of about 75 percent. Plans are in progress to increase production by 50,000 tons of acid-grade fluorspar per year.

V. A. Haw of the Industrial Minerals Division, Mines Branch, Ottawa, gave the first account of the work done to date in developing the kyanite resources of Canada in his paper, "Kyanite in Canada". After the identification of kyanite in gneiss near Mattawa, Ontario, other deposits were found near Sudbury and Fernleigh, Ontario, and in the Big Bend area of the Columbia River, British Columbia. In all these deposits the kyanite occurs in disseminated crystals together with garnet, muscovite, biotite, quartz, and feldspar.

Kyanite owes its value to its property of converting to mullite when heated to more than 1,300 deg. C. This mullite has unusually high refractoriness, a low coefficient of expansion, high resistance to load at high temperature and to thermal shock, as well as to the corrosive action of slags, and is therefore a valued material for making special refractories.

The Canadian deposits are very large and have kyanite contents ranging from 10 to 25 percent. Mining companies have acquired properties in each of the areas and have shipped large samples to the laboratories of the Industrial Minerals Division at Ottawa for investigation. These investigations have shown that recovery of associated muscovite, and possibly garnet, along with the kyanite, may be necessary in the low-grade deposits to support an economic operation. Satisfactory grades of all three minerals have been obtained in the laboratory using impact crushers, magnetic separators, air tables, and froth flotation. The kyanite concentrates have an average composition of 59 percent $Al_2O_3$, 39 percent $SiO_2$, and less than 1 percent $Fe_2O_3$.

"Phosphate Rocks as an Economic Source of Fluorine", a paper by W. L. Hill and K. D. Jacob of the United States Department of Agriculture, drew attention to a large and as yet undeveloped source of fluorine and fluorine compounds to supply the rapidly increasing demand for this element. The estimated quantity of fluorine carried in phosphate rock sold or used in the United States in 1950 was about 420,000 short tons, of which approximately three-fourths was in rock going to the manufacture of superphosphate, phosphorus, and phosphoric acid, in all of which processes fluorine is

evolved. The total amount of fluorine evolved from these processes in 1950 was estimated to be from 75,000 to 100,000 tons, whereas recovery of fluorine as fluosilicates, fluosilicic acid and sodium fluoride in 1950 was equivalent to only about 15,000 tons of fluorine.

Dean J. F. McMahon and W. E. Brownell of the New York College of Ceramics, presented a paper entitled "Methods of Proving the Worth of Clay and Shale Deposits". They were of the opinion that surveys of clay and shale deposits should be made by teams, each consisting of a geologist, a ceramic engineer, and an economist. The final report should be an engineering report in which the properties of the materials are considered in the light of their usefulness and the economics of their manufacture. The authors presented details of a survey carried on in New York state.

## MacLeod, Koss Nominated For Top A.G.C. Posts in 1954

The nomination of John MacLeod, president of Macco Corporation of Paramount, Calif., for president of The Associated General Contractors of America in 1954 has been announced by the association. Mr. MacLeod's nomination was made by the A.G.C. governing and advisory boards in session at the Edgewater Beach Hotel, Chicago. George C. Koss, president of the Koss Construction Company, Des Moines, Iowa, was nominated for vice-president.

Voting will be by letter ballot in December and the installation of officers will be made at the conclusion of the A.G.C. annual convention in Los Angeles in March, 1954. Mr. MacLeod is currently vice-president. C. P. Street, McDevitt & Street Company, Charlotte, N. C., president of the association, will serve through the Los Angeles meeting.

## Oregon Bauxite Deposit Investigated by Geologists

The Oregon City Sand & Gravel Company, aggregates and ready-mixed concrete producer at Oregon City, Oreg., obtains its raw material from the bed of the Clackamas River, near its confluence with the Willamette River, about ½ mi. north of the city. The material is removed by drag-line operating below the water.

The bucket, digging below the bed of sand and gravel recently, began bringing up important quantities of ferruginous bauxite. The occurrence is said to have excited considerable interest, chiefly among the nation's aluminum producers, who are forced to import much of the aluminous raw material.

Some of the bauxite being brought up shows the typical, red oolitic texture, while some is gray, both being strongly magnetic. Additional material consists of massive chunks of tan and buff-colored clay. Investigations are being undertaken by the Oregon Department of Geology and Mineral Industries. Analyses of samples have run as follows:

| | $Al_2O_3$ | $Fe_2O_3$ | $SiO_2$ |
|---|---|---|---|
| Gray oolitic... | 36.88% | 31.30% | 13.96% |
| Red oolitic.... | 34.68 | 29.40 | 12.14 |
| Tan and buff clays ..... | 32.84 | 21.49 | 32.88 |

## Two New Levels Established At Kaiser Dolomite Mine

The Kaiser Aluminum & Chemical Corporation has established two new benches at its open-pit Natividad dolomite mine near Hollister, Calif. New benches are on the 812- and 850-ft. levels of the huge open pit, where power shovels are operating on the 700-ft. level. Two new access roads have been built to the deposit for trucks and handling of machinery.

Superintendent Jack D. Moore states the new benches and extension of other benches gives the company more than a mile of working faces and facilitates higher ore production at lower costs. Ore is sent through a primary jaw crusher, then conveyed to the heavy-media separation plant, which upgrades the product for use in the corporation's dolomite and limestone plants.

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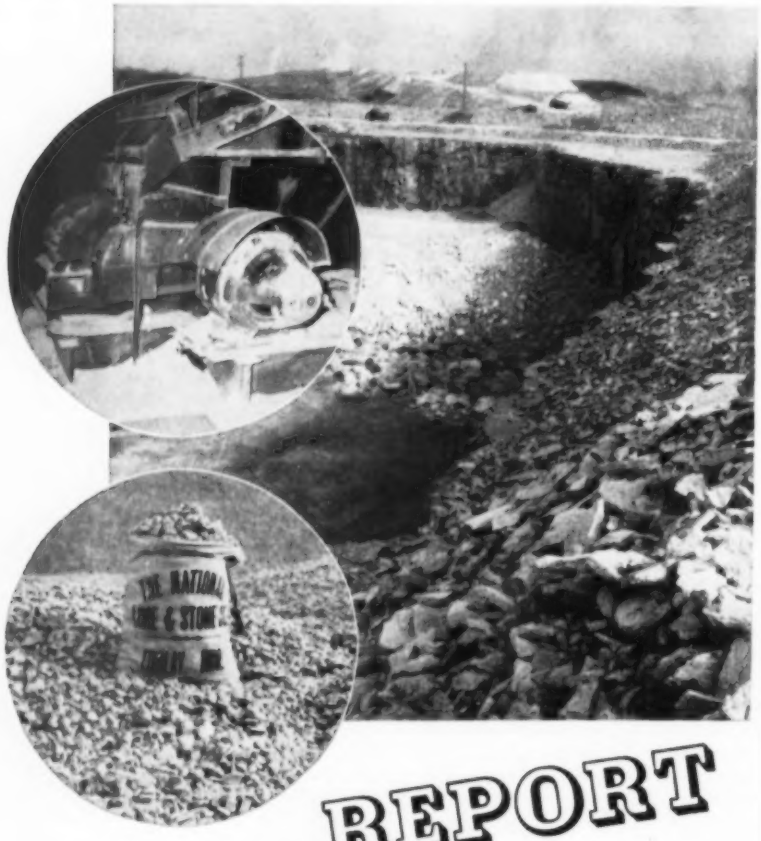
The United States Gypsum Company's plant at Evans, Wash., which was closed by a walkout in April, has been discontinued. It was stated that all efforts to settle the strike had failed. The plant had been in continuous operation for 53 years, except for a shutdown after a fire.

REPORT

"NO DOWNTIME IN 4 YEARS"

It's that kind of record that makes Eagle equipment a favorite in the limestone field. In addition to the faithful 24 x 24 hammermill pictured above, there is installed in this quarry an Eagle 36 x 42 which takes the rock from the gyratory crusher and reduces it for the smaller mill.

Please write for more details if you're interested.

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JAW CRUSHERS · IMPACT BREAKERS
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# More Information, Please

## CHECK AND MAIL THE CARD BELOW FOR ADDITIONAL INFORMATION ON NEW MACHINERY AND SUPPLIES

1. **SCREW WASHERS.** Sixteen models with single or double screws and capacities from 35 to 250-tph on plus 100 mesh material are described in this *McLanahan* bulletin.

2. **PORTABLE COMPRESSORS.** *Worthington's* Blue Brute line of two-stage, air-cooled units, gasoline or diesel-powered, capacities 30 to 600-cfm, are described in this 28-page brochure.

3. **VIBRATING SCREEN.** Recommended for small quarries, roadside plants, cinder block plants and the like, the single-deck, suspended *Hewitt-Robins* unit comes with its vibrator mounted above or below, this 8-page bulletin shows.

4. **MATERIALS HANDLING** and earth-moving jobs done by the *Hough* Payloader tractor-shovel are featured in this 16-page brochure. The one-cubic yard unit which has four wheel drive and comes in seven sizes.

5. **CLAMSHELL BUCKETS** for rehandling, heavy digging and other duties are shown with capacities, weights, and other pertinent details in this *Brownhoist* folder.

6. **GUIA** para Recubrimiento con Metal Duro, aplicaciones manuales del proceso en equipo usado en movimiento de tierra y construcciones viales y las industrias de productos petreos, cemento mineria, dragado, ladrillo y acrilla . . . *Stoody Company.*

7. **EXPLOSIVE** information fills this file-size 48-page booklet from *Atlas Powder.* Many illustrations, tables and valuable details on blasting techniques are included.

8. **ELECTRIC SHOVELS** built by *Harnischfeger* are illustrated in detail in this full-color 20-page brochure about P&H, "the pride of the pit".

9. **INDUSTRIAL SCREENS** and advice on choosing them fill this 76-page *Colorado Fuel & Iron* catalog of the Wimco and Calwico lines.

10. **GEAR SPEED REDUCERS** of the right angle type, parallel and vertical drives, are shown in this 84-page *D. O. James* catalog. Helps on selecting the right unit are included. Reduction ratios from 1:1 to 1100:1 and ratings from .14-hp to 350-hp feature the line.

11. **VALUABLE INFORMATION.** Tables of weights and measures, hydraulic data, screen and conveyor information and many other handy tidbits are included in this *McNally Pittsburgh* pocket-size spiral-bound memo book for coal producers, but equally useful to pit and quarry men.

12. **TRANSMISSION BELTING** with Thor rayon plies surpass conventional cotton plies this *Goodyear* bulletin shows.

13. **TRAINING COURSES** in maintaining *Euclid* equipment, free to employees of Euc users, are described in this folder. Given at Cleveland, each of the six different courses runs a week.

14. **THE ONLY LOADER** with a power crowding bucket action to permit it to scoop up its load while the tractor is stationary, is the way this bulletin describes the heavy-duty *Lassman* front-end loader.

15. **DREDGING LADDERS.** Clearly describing the *Eagle* Swintek travelling chain ladder operation with pictures, sketches and pithy copy, this 16-page brochure shows this dredging machine at work all over the nation.

16. **INSTRUCTIONS** for installing basic refractory brick in the hot zones of cement kilns,—a 30-page pocket-size volume from *Kaiser Aluminum & Chemical* draws upon the firm's experience with installations using this new development.

17. **ADVANTAGES** of the 3:1 planetary type gear reduction in each wheel of the new 4-wheel drive Baker-Lull Shovel-loader are shown together with this 1½-yd. unit's other features in this 8-page brochure.

18. **AUTOMATIC CONTROLS** for indicating, recording, controlling liquids, granular solids, viscous fluids, powder, etc. are shown in this 8-page catalog of the *Fielden* division of *Robertshaw-Fulton.*

19. **AIR COMPRESSORS** in the 85 to 210-cfm class, gasoline or diesel power, single and two-stage units, are shown in this 12-page *OK Machinery* booklet.

20. **HARD-FACING ELECTRODES** for correcting wear patterns from abrasion, impact, corrosion, heat and/or compression—the Wear-Arc line—are shown in this 12-page application bulletin from *Alloy Rods.*

21. **"BETTER BLASTING"**, a new quarterly technical bulletin, has been published by *Atlas Powder.* Please note your title and the nature of your business on the reply card if you wish to be put on the free mailing list.

22. **"POWER AND FLUIDS"**, a new quarterly for readers in the power and fluid-handling fields, will be sent free to users of *Worthington* equipment and others interested.

23. **PROCESSING PLANT** products made by *Johns-Manville*—insulations, refractories, Transite pipe, packings, etc. —are described in this 8-page bro-

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November, 1953

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# More Information, Please

chure, with typical illustrations and other data.

**24. SPREADERS** for fertilizer or ice control service, featuring a hydraulically-controlled spreading mechanism, are shown in this Baughman literature.

**25. "PLUGGING PROFIT LEAKS"** in mining operations is the title of this case history booklet on *Caterpillar* diesels and electric sets.

**26. CLINKER COOLER** instrumentation for the cement industry is discussed in this *Minneapolis-Honeywell* report, which considers desired bed depth and actual depth, and pneumatic and electric control systems.

**27. SELECTOR GUIDE.** The full range of Carset Jackbits is shown in this handy 8-page *Ingersoll-Rand* brochure, to help the user choose the right bit for each connection and application.

**28. DETECTING METAL** with the new *RCA* electronic unit is described in this bulletin. The system gives an alarm whenever dangerous metal is on the conveyor on the way to crusher or screens.

**29. CONVEYING BY AIR.** This 16-page *Fuller* booklet shows the flexibility and adaptability of the Fuller-Kinyon system to bulk materials moving work in the non-metallic minerals field.

**30. ENGINE GUIDE.** *Le Roi* has this 4-page bulletin to give you a complete tabulation of torque, rpm, horsepower ratings and other factors on its gasoline, natural gas and butane engines and power units.

**31. SAFETY GLOVES** and other items of safety apparel are shown in this 12-page *Advance Glove* catalog.

**32. FLOTATION RECOVERY** of kyanite by Commercialores at Clover, S. C.—from basic geology through final milling—is described in this *Denver Equipment Co.* bulletin. About 90 percent of the ore present in the rock is recovered.

**33. AIR TOOL LUBRICATION,** by "oiled air" on all pneumatic tools is described in this *Arnold* leaflet. The lubricator fits into the air line, is loaded without removing, and has a "window" to check the reservoir content.

**34. A UNIQUE BOOK** has been issued by *Thew Shovel* to describe its Lorain TL shovel-cranes. Transparent sheets, imprinted with photographs, unveil the internal workings of the turntable, taking you "inside" to another component assembly as you turn each page. This is one of the first industrial uses of this layer-by-layer technique, developed a few years ago for medical books.

**35. SCRAPERS** and their application in earthmoving and bulk materials handling is treated in this 8-page *Caterpillar* booklet, "A Good Business Deal".

**36. SELECT PUMPS,** using this *Nagle* guide for pumps for abusive duty.

**37. INDUSTRIAL BATTERIES.** Long life, low maintenance and extreme reliability are features of the *Nickel Cadmium* batteries, this literature shows.

**38. MATERIALS HANDLING.** Problems in storage and conveying are solved through the coordinated design, manufacture and construction facilities of the *Standley Company,* this leaflet points out.

**39. SPEED DRIVES** of the positive, infinitely variable type (PIV) recently added to the *Link-Belt* line are shown in this bulletin. The 20 and 25-hp units are made with or without input and/or output gears.

**40. CYCLONIC COMBUSTION,** a new heat transfer method for boilers, where air is introduced at high velocity to the combustion chamber in a revolving spiral vortex, radiating heat to the fire tube through direct radiation and convection, is described in this *Cyclotherm* bulletin.

**41. QUALITY CONTROL.** Scales for automatic weighing, bagging and proportioning made by *Richardson Scale Co.* are shown in this illustrated 32-page brochure.

**42. CHAINS** for conveyors and drives made by *Chain Belt* are shown in this leaflet about the new Rex Chabelco improved line.

**43. CAR PULLERS** of various types and related products made by *Stephens-Adamson* are shown and described in this 8-page bulletin.

**44. DUMP TRAILER** packages—a new design for heavy hauling with front-mount twin telescopic hoists in 3 or 4-sleeve types—are described in this *Hercules* leaflet.

**45. DRIVE GEARS** for belt conveyors, developed in England and sold around the world, are described in this *Mavor & Coulson* booklet.

**46. PORTABLE COMPRESSORS** in seven models from 60 to 600-cfm are described briefly in this *Davey* catalog sheet. Gasoline, diesel and electric units are made, with skid, 2 and 4-wheel mountings.

**47. ADJUSTABLE VOLTAGE DRIVES** for variable speed applications now come in a factory-engineered "package" for ready installation wherever exacting control of a DC motor from an AC power line is required. This 16-page *Westinghouse* booklet gives complete data, showing typical applications.

**48. DC MOTORS AND GENERATORS** made by *Louis Allis* are cataloged in this 16-page bulletin. Photos and drawings show the details of the ½ to 330-hp motors and ¾ to 250-kw generators. The characteristics and features of DC electricity and motors are given in easy-to-understand language.

**49. ROLLER CHAINS** in many unusual applications are shown in this 24-page *Chain Belt* booklet about Baldwin-Rex roller chain, the "field for which is as broad as the horizon".

**50. CORROSION RESISTANCE** of copper and copper alloys is discussed in this 28-page *American Brass* brochure. The booklet explains the chemical and physical nature of corrosive attack in its various forms, summing up 27 years of research work and field study by the firm's technical staff.

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# You get "gravy"...

## NOT JUST WATER, WITH AN EAGLE "Swintek" ON THE JOB!

A dredge pump can't do the impossible—it handles a given volume of water and a varying volume of solids. With a little help at the right spot (at the intake nozzle) a dredge pump will deliver a far greater amount of solids.

An Eagle "Swintek" Traveling Screen Chain Dredging Ladder cuts and rakes loose deposit material and practically "spoons" it to the nozzle—you get the "gravy"—"thick gravy"—not just water.

Furthermore, the traveling chain screens the nozzle—keeps out boulders and debris. The cutter bars chop through clay strata and undercuts banks. The 75' Eagle Light Duty "Swintek" of the Walt Keeler Co., Inc., Wichita, Kansas is shown below.

**AN EAGLE "SWINTEK" QUICKLY RETURNS ITS COST. USERS HAVE REPORTED UP TO 400 PER CENT INCREASE IN PRODUCTION. GET THE FACTS. SEND FOR NEW CATALOG 83.**

**There's An EAGLE "Swintek" For Every Deposit Condition**

- *Heavy* DUTY
- *Light* DUTY
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**EAGLE IRON WORKS**

LEADERS IN AGGREGATE WASHING AND CLASSIFYING EQUIPMENT FOR HALF A CENTURY
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# Screen Plates Cut by Torch Prove Practical, Economical

AS the business at Radum, Calif., in Henry J. Kaiser's large gravel pit increased to an output of some 1,000 tons of finished aggregates every hour, the problem of maintaining accurate sizing in the shaker screens became acute. Finally, according to Bart Carter, superintendent, officials of the metal stamping firm which had been punching the screens out of high-carbon steel plate complained that their dies were breaking under the greater production demands. They said that the cost of producing the screens would have to be increased to offset the expense of die replacement.

To overcome these difficulties, Ray Dias, shop foreman and his burner, Jack Regas, started experimenting with the possibility of burning out the grids with an Oxweld 1201 automatic twin-torch flame-cutting machine.

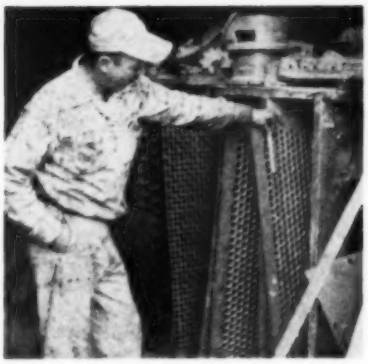
In the course of the work they found that the knurl traveled so slowly over the short spaces and sharp angles of the template that the work had a tendency to reweld itself. This problem was defeated by altering the gears in the driving mechanism so that the machine was speeded up about three times normal rate. Too, as in the case of larger jobs, it was necessary to find some way of piercing the wasted piece before throwing the machine on the automatic cycle. A short telescopic sleeve was made to replace the rigid "T" on the arm which carries the torches, and to this was fitted a lever which permitted the operator, by a twist of the wrist, to draw the flame away from the hole as required.

Screens used are 8 ft. 6 in. by 4 ft. The holes range from 2⅞ in. to ¾ in. although experiments promise success down to ½ in. eventually. From 2½ in. to maximum size, ½ in. plate is used. Down to 1¼ in., ⅜ in. plate is used. From there to minimum, ¼ in. is used. The template is made up of cubes of square bar stock equally spaced and carefully mounted on a piece of ¼ in. plywood which is screwed to the table when needed.

At present, all the plates used for grids are of high-grade abrasion-resistant steel which, when flame cut, takes on a temper that substantially increases the wearing qualities over the older punched jobs.

This photo shows how the work may be accomplished with a small, simple template of inexpensive design or material. The work is completed by periodic resetting of template and torches.

The burner prepares to extract a finished screen from the burner table at the completion of the job. This shot gives an overall view of the general setup.



Right: Ray Dias, foreman, holds a 6-in. scale against a completed screen to convey some idea of its size and symmetry.

## Basic Refractories Report Cites Seven-Year Growth

The annual report for 1952 of Basic Refractories, Incorporated, Cleveland, Ohio, reviews the developments involved in major additions to fixed assets over a seven-year period by this leading producer of basic granular refractories for lining open-hearth and electric steel furnaces.

Shown in the 16-page report is a gain in fixed assets of $9,544,554 during the 1946-1952 period.

Developments behind this addition to assets are reported as follows: 1946-47, purchase from the government and expansion of dead burned dolomite plant in Ohio; 1947-48, expansion of facilities for manufacturing magnesia refractories; 1949-50, purchase from the government and conversion of magnesite property in Nevada; 1951-52, expansion of Ohio works further to increase dead-burned dolomite production.

Based upon current monthly levels, annual sales are at a rate of $16,000,000 according to H. P. Eells Jr., president. This is an increase of 69 percent over the $4,893,209 sales in 1946, showing the fast-growing demand of the steel industry for the company's granular dead-burned dolomite essential in steel-producing furnace construction and maintenance.

Pictured in the striking photographs and described in the text of the report's gravure insert are Basic's two plants, the Nevada works at Gabbs and the Ohio works at Maple Grove.

## $1,000,000 Research Center Begun for National Gypsum

Ground has been broken for construction of the National Gypsum Company's new $1,000,000 research center in the town of Tonawanda, N. Y.

John W. Cowper, Inc., has been awarded the general construction contract for the 47,200-sq. ft. building.

The year's end has been set as a target for completion. The center will employ about 100 persons, chiefly technical workers. William H. Harding, as director of research and assistant to the president, will be in charge of the research center. Fundamental research in product development and technical service for the company's plants will be the general function of the new facility.

## Canadian Producers Plan To Rebuild Plant Facilities After $35,000 Fire Loss

John G. Walker, president of the Walker Brothers Quarries, Thorold, Ontario, has announced that a contract for rebuilding the machine shop, destroyed by fire on July 3, has been awarded.

Fire of undetermined origin gutted the Walker Brothers shop, although firemen battled the blaze for two hours to bring it under control. Loss to the company was estimated at $35,000.

## College Boys Get a Look-See At Hawkeye-Marquette Plant

Questions and answers flew thick and fast a few weeks ago when 35 "student engineers" from Iowa State College, Ames, visited the DesMoines plant of the Marquette Cement Manufacturing Company. The occasion was the annual tour of the future engineers to this plant —a custom which originated about 30 years ago.

On the receiving end of the barrage of inquiries was Jim Griffin, plant superintendent, who gave with an expert's answers through the tour. The day's program also included visits to other DesMoines industries. A dinner at the airport's Cloud Room, with Marquette men as hosts, climaxed the trip.

## Potash Plant Workers Star In TV's Industry on Parade

Television fans in the Carlsbad, N. M., area saw home-town boys make good in the TV world recently as they viewed a film entitled *Industry on Parade*. Featured in the TV movie were several employees of the Potash Company of America—John Restine, who showed how a Joy loader bites into potash ore; Hugh Mize at the controls of a shuttle car; H. C. Haynes demonstrating how ore is unloaded from shuttle cars into elevators; Hank Boulware, refinery mechanic, beside a filter; Floyd Autry bagging potash; and Elmer Smith checking the performance of refinery flotation cells.

The film was telecast by 78 stations throughout the country, and many in foreign countries also had an opportunity to see it. The Voice of America has been distributing *Industry on Parade* abroad in recent months to show the people of other nations how free enterprise works in American industry.

## Calaveras Plant in Miniature Viewed by 400,000 at Fair

A miniature cement manufacturing plant, complete in every detail, has been built by the Calaveras Cement Company to give the public a better understanding of how portland cement is made.

The 10- by 8-ft. working model was previewed in September by nearly 400,000 visitors to the 1953 California State Fair, where it was a highlight of Calaveras County's first-prize display.

Built on a scale of ⅛ in. to the foot, the model is a faithful reproduction of Calaveras Cement Company's modern four-kiln plant at San Andreas, Calif.

Major pieces of machinery are shown in motion at the actual speeds at which they turn at the plant, and many of them are made of lucite, so that viewers can see what goes on inside. To give authenticity to the model, company chemists took raw materials from every point of the production line at San Andreas, and painstakingly ground them to scale for replacement in the model at the corresponding points.

The exhibit required 1,200 man-hours to complete. It is powered by eight electric motors, each geared to do a specific job. Every moving unit is operated by independent chain drive, and eccentric motions are accurately reproduced with the help of specially-contrived springs.

Many of those who stopped to watch the exhibit gave thought for the first time in their lives to the question of how cement is made, and to the many ways in which it is used to add comfort to their daily lives. A continuously playing recorded explanation of the plant operation anticipated most of the public's questions, answering them before they could be raised.

## Higher Sales and Profits Reported During 1953-52 For Nonmetals Operations

Sales and earnings of nonmetallic minerals producing plants throughout the country were on the upgrade, for the most part. Texas Industries, Dallas, reported a net profit of $329,000 for the year ended May 31, 1953, compared with $169,000 in the preceding 12-month period. Net sales for 1953 amounted to $5,773,000; $3,807,000 in 1952.

During the year ended December 31, 1952, Material Service Corporation net sales were $46,208,000, an increase of $594,000 over the sales of $45,614,000 for 1951. Net income, however, was $2,897,000, or $105,000 less than in 1951.

The Colorado Fuel and Iron Corporation and its subsidiaries earned $8,031,224 in the year ended June 30, 1953, a 39 percent increase over the preceding year. Total sales for the year stood at $248,835,574, an all-time high.

Record net sales of $56,590,114 were reported by the Davison Chemical Corporation for the year ended June 30, 1953. This represented a 14 percent increase over the 1952 total, which had been the best previous year. Net income of $2,926,138 for 1953 was 39 percent greater than the 1952 net income.

Howard P. Eells, Jr., president of Basic Refractories, Inc., reported net earnings of his firm to be $375,516 for the first six months of 1953, as compared with $153,094 in 1952. Earnings are based on net sales of $8,188,914 for the January-June period, against $5,638,010 for the comparable period in 1952.

The International Minerals & Chemical Corporation net earnings for the fiscal year ended June 30, 1953, were $7,030,176, a 6 percent increase from the previous year's figure. This year net sales were $88,847,456, or 5 percent over sales in the preceding year.

Record sales of $106,234,119 were reported for the first six months of this year by the Minnesota Mining & Manufacturing Company. In 1952 sales amounted to $88,074,407 during the first half of the year. Net income (after taxes and preferred stock dividends) rose from $7,287,400 in 1952 to $8,862,021.

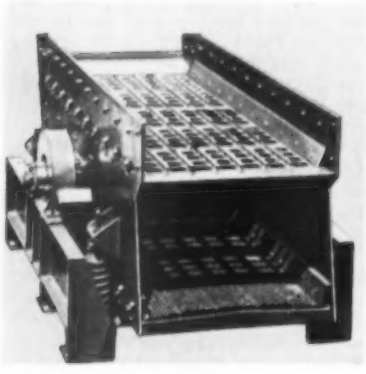
● Two models for one look—Miss Barbara Lee Nutter, theme girl of the 1953 California State Fair, with the working model of the Calaveras Cement Company at San Andreas, Calif., built on a scale of ⅛ in. to the foot.

# new machinery and supplies

PIT AND QUARRY

## ● Redesign Vibrating Screens

Heavier service, more efficient operation and greater durability are said to result from the redesigning of the Mesabi-type vibrating screens built by *Pioneer Engr. Works*, Minneapolis 13. The units are available in single deck, (for scalping) or 2-decks (for scalping



or sizing) in these sizes: 4-ft. wide, 10 and 12-ft. lengths; 5-ft. wide, 10, 12 and 14-ft. lengths; and 6-ft. wide in 12 and 14-ft. lengths.

The main frame in the 4-ft. units has been redesigned to include an 18-in. car channel reinforced with 8-in. cross beams. The 5 and 6-ft. units use an I-beam instead of the car channel. This new design makes the main frame unusually strong, Pioneer says, and vibration is reduced to a minimum without sacrifice of the action of the screen pan.

The single-deck scalping screen has a ¾-in. punched plate deck; the two-deck has a ½-in. punched plate top deck and a bottom deck of wire mesh. Two-deck sizing screens use wire mesh on both decks. Standard punched plates have square openings ranging from 2 to 8-in. wide with ½-in. increments. The wire mesh screens in the new 5 and 6-ft. wide sizes are fitted with side clamp bars plus a new center clamping strip to hold the screen in position and reduce metal-fatigue failure. All inner and outer bearings are SKF, and heavier inner bearings are used on the 5x14, 6x12 and 6x14 than previously used in Mesabi screens.

## ● New Blasting Method

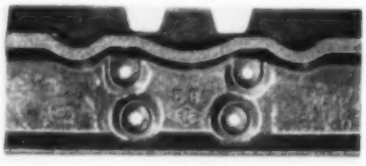
Loading alternate holes with low and high velocity explosives, and setting them off in conjunction with millisecond delay detonators forms a new blasting method. Developed by *Atlas Powder Co.*, as "alternate velocity loading", it is said to produce more breakage per pound of explosive and to give better control of throw.

The system places the rock under a powerful twisting stress with the initial discharge of low velocity explosive. A tiny fraction of a second later, the high velocity explosive is detonated, hitting the stressed rock at the moment when maximum shattering action can be obtained. In some cases the need for secondary blasting is virtually eliminated, tests indicate.

Low-cost ammonium nitrate explosive, made to perform as low, medium or high velocity explosive by the insertion during manufacture of a core of ammonia gelatin, is used for blasting economy.

## ● New Grouser Design

Several operational advantages are claimed for a new grouser shoe, designed by *Engineered Equipment Co.*, South Gate, Calif. Made of 13 percent manganese steel for longer life, the new

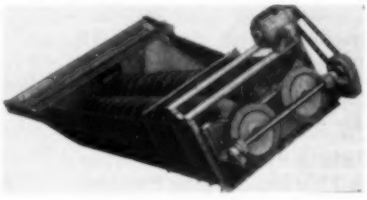


shoe, the Gripper, features a combination of curved and straight surfaces to give the crawler better ground contact with no increase in width or weight.

Better traction, less side slipping on side-hill work, and improved flotation are among the result of the new design. The shape of the Gripper reduces the grouser's tendency to bury itself, and while the machine rides higher, it doesn't lose traction. Higher speeds are thus possible with less power, the developers say. Raised bosses around countersunk holes protect bolt heads. Shoe ends are reinforced to equalize wear and cut the tendency to round up at outside corners. Renewable re-grousering bars are available.

## ● Screw Washers

A new series of screw washers for removing waste and water from sand and similar materials has been developed by *McLanahan & Stone*, Hollidaysburg, Pa. Made in 20 and 25-ft. screw lengths, the units are available in single or double screw models, engineered for fine or

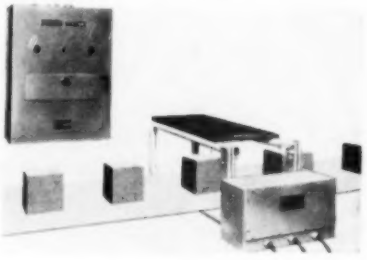


coarse materials. The 20-ft. screw produces sand with a 12-15 percent moisture content, the 25-ft. unit yields sand with 10-12 percent moisture. Capacities range from 35 to 125-t.p.h. with single screws, 70 to 250-t.p.h. with double units, on the basis of +100 mesh material.

Welded into rigid, water tight, self-contained units, the McLanahan screw washers come ready for placement on the foundation. Designed for a minimum of maintenance, they have extra large settling areas, enclosed reduction drives, flights of cast chilled-iron, and grease-lubricated anti-friction bearings.

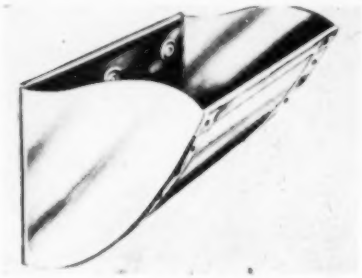
## ● Spots Vibration Danger

A new protective device developed by *General Electric* signals when excessive vibration due to unbalance occurs in large rotating equipment. Built for use with apparatus that is left untended for long periods, the electronic relay has an operating range which permits its use at speeds from 300 to 18,000-r.p.m. It will energize alarm, corrective or shutdown devices at pre-set vibration acceleration values up to 20g.



## • Elevator Buckets

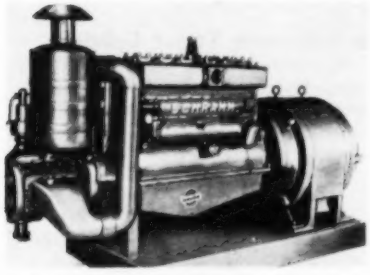
The resumption of the manufacture of Hi-Cap elevator buckets has been announced by *Fort Worth Steel & Mchy. Co.*, 3651 McCart St., Fort Worth, Texas. Discontinued in 1951 due to materials shortages, the Hi-Cap buckets perform with equal efficiency at high,



medium or low speeds, and are suitable for replacement or new installations in chain or belt elevators. Built of heavy gauge cold-rolled steel, they have a double-thick rolled front lip for high rigidity. The ends are formed so as to support the bucket body and spot welded to remove weld shear stress. The body is shaped for maximum load and a clean quick discharge, with tapered ends to reduce pickup and discharge friction.

## • Industrial Compressor

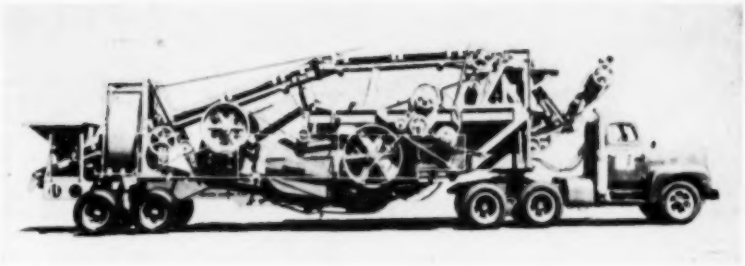
A new and larger industrial compressor has been added to the line made by *Schramm, Inc.*, West Chester, Pa. It is designed to provide 600-c.f.m. at 100-p.s.i. Powered by a 150-hp. induction motor, the Model 600 Super Unistage has a 43 percent greater capacity than



the largest industrial unit heretofore made by Schramm. It requires little additional floor space, however. The unit is vibrationless, can be installed without an expensive foundation, and can be moved on a fork truck, the firm says. It is available with running water cooling, or with cooling unit built-in with or without a hood. Synchronous motors are optional.

## • Helps Lube System

An air-operated automatic "pressure charger" for use with high pressure lubrication systems has been developed by *Alemite* to overcome problems resulting from long pipe lines, low temperatures or "tough" lubricants. Installed near the delivery host, it provides 6,000 lbs. of lubricant pressure at the control valve when used with 125 lb. of air pressure.



## • Portable Plant

Over 350 tph of ¾-in. minus aggregate has been produced in field tests by the newly introduced All American 77 portable crushing and screening plant, *Diamond Iron Works* reports. Incorporating all the high production features of its predecessors, it has several improvements for added production. Completely mobile for highway travel, it can be towed as a trailer or as a separate unit.

One of the new features, a hydraulic mechanism raises and lowers the large 4x12-ft. 2½-deck vibrating screen. Another, an oversized 36x22 Star Gear roll crusher for crushing 2¼-in. material to ¾-in. aggregate relieves the 10x36 jaw crusher of this work. The unit also has a 2x7-ft. rotor lift and 30-in. belts on all conveyors. The plant is mounted on a welded gooseneck truck, with a fifth wheel in front and two axles and equalizer on the rear. Eight 9.00x20 12-ply tires are used. Guarded V-belt drives are used where possible. The power unit is side-mounted and drives the plant through a spline shaft. Delivery conveyor folds to make room for the tractor cab in travel.

## • Husky, Light Dump Hoist

Designed for 8 to 10-ft. dump bodies, a new light-weight hydraulic hoist is being made by the *Heil Co.* Low in price, it is installed in a few hours. Mounted on a dump body, the hoist has payload capac-

ities ranging from 5½ to 4¼ tons, using 8 to 10-ft. body lengths. It has a 50-deg. dumping angle, and features a very low mounting height.

## • Truck Crane

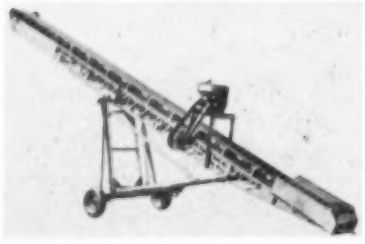
A crane with a 7-ton capacity is being made exclusively for truck mounting by the Harnischfeger Corporation, 4400 W. National Avenue, Milwaukee 46, Wis.

The "Miti-Mite" crane can be converted to any front end service such as shovel, back hoe, clamshell, dragline, magnet crane, and lifting crane. The entire deck of the machine is built as an integral unit and becomes the frame that supports all shafts, drums, gantry, engine, counterweight and attachments. Power is supplied by a six-cylinder gasoline engine driving through a four-speed transmission. All machinery is fully enclosed, running in oil, on anti-friction bearings. Hydraulic controls operate the machinery.

● This heavy-duty 10-ton dump truck (Model 10-S) has recently been introduced by the Dart Truck Co., Kansas City, Mo. The unit, which utilizes the box section frame, is powered by a 6-cylinder, 155-hp. diesel engine. The truck possesses a twin double-acting single-stage hoist which raises to a 60 deg. dumping angle. An additional feature of the truck is its front end suspension.

## ● Portable Conveyor

Developed for handling loose materials, a portable, heavy-duty belt conveyor in three widths (18, 24 and 30-in.) is being



produced by *Atlas Conveyor Co.*, Clintonville, Wis. Built in lengths from 25 to 60-ft., it has roller bearing idlers, anti-friction shaft bearings and pneumatic-tired swivel wheels. Power is transmitted by drive shaft through two enclosed gear cases to the head pulley. Only 13¼-ft. road clearance is needed by a 60-ft. long model.

## ● All-Temperature Grease

A new lubricant called a "global grease" has been developed for the armed services by the *Texas Co.* It is said to perform equally well in tropic or arctic temperatures, have high resistance to oxidation, give good rust and corrosion resistance, and to perform even when contaminated with water. Sounds good for pit and quarry work, too!

## ● Speedy Dump Trailer

Maximum legal payloads for over-the-road hauling, plus the ability to perform rugged off-the-road duty are among the claims for the Center Dump semi-trailer built by *Omaha Standard*, 2401 W. Broadway, Council Bluffs, Iowa.

Hitched to a conventional truck-tractor prime mover, the Center Dump works at high speeds with all pit and quarry materials. Low net weight, a low center of gravity and high structural strength combine to give the unit unlimited usefulness over all types of terrain, Omaha Standard says.

The hopper framing and skins provide a deep truss to the main frame, permitting the use of lighter members keeping dead weight down. All bracing and reinforcement is on the exterior of the hopper, so the load discharges without obstruction. Clamshell dumping gates are hydraulically controlled from inside the cab, and secured tightly by a positive-lock latch.

Built in a standard 20-yd. size, the dump unit can be made in other sizes also. Westinghouse-Bendix air brakes are standard, as are a spare tire carrier and clearance lights. Hydraulic control equipment is furnished in a compact unit, and tires come in accordance with the job requirements.

## ● New Waterproof A-C Motor

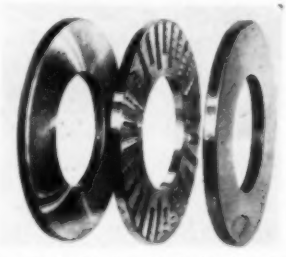
A new line of polyphase a-c motors, the Tri-Clad "55", has been announced by *General Electric*. The new motor, which is said to offer better protection, more efficiency, and quieter operation, features new and advanced concepts of motor design.

With an average size reduction of 50 percent by volume and 22 percent by weight per horsepower, the "55" retains cast-iron construction and incorporates a new insulation system, bearing assembly, and ventilation plan.

The one-hp. drip-proof motor shown here is getting a water bath christening. Initially producing the "55" in one-hp. sizes, G. E. will introduce larger sizes in the very near future.

## ● Improved Thrust Bearing

Modifications made in a high-capacity thrust bearing for heavy-duty applications such as pulverizers and generators



have raised the bearing's load capacity about nine percent and increased its life about 29 percent, *Rollway Bearing Co.*, Syracuse, N. Y. reports.

A different retainer design produces these results. Long roller slots, each with five rollers, alternate with short slots having four rollers each. A greater number of rollers thus exposed to the bearing's thrust load, increasing load capacity. The new bearing carries a 590,000-lb. load at 100-rpm in contrast to the 542,000-lb. load on older types using straight slotting. The retainer is bronze, cast centrifugally to eliminate voids along roller slots.

## Fire Clay Production, Sales Show Slight Decline in 1952

Fire clay sold or used in the United States in 1952 decreased 5 percent to 11,285,173 short tons from the peak year 1951 (11,852,517 short tons), according to reports by producers to the U. S. Bureau of Mines. The decline was owing, for the most part, to the general slackening in industrial demand for refractories. The increased activity in the refractory and construction industries which had its beginning in the early part of 1950, and which continued through 1951, began to level off in 1952. Although fire clay production showed a 5 percent decrease, compared to 1951, it still was the second-largest tonnage output in the history of the industry. Of the principal fire clay producing states, Alabama, Arkansas, California, Missouri, Texas, and Washington showed increases in output. The remaining 11 states reported decreases.

The principal uses of fire clay in 1952 were refractories manufacture—6,435,650 short tons, a 7 percent decrease, compared to 1951; and heavy clay products —4,444,807 short tons, a 4 percent decrease, compared to 1951. Refractories and heavy clay products combined used 96 percent of the total tonnage in 1952. Although the large consumers of fire clay registered decreases in 1952 from 1951, several of the smaller consumers such as high-grade tile, architectural terra cotta, and rotary-drilling mud, showed increases. Even though no consumption of fire clay was reported in the rubber industry in 1951, consumption of more than 9,000 short tons was reported in 1952.

In 1952 Ohio ranked first in fire clay output, followed by Pennsylvania, Missouri, Kentucky, California, Illinois, and Indiana. These seven states accounted for 76 percent of the total production in 1952, the same as in 1951.

The price of crude fire clay mainly depends on the type, quality, and geographic location. The average value of fire clay sold or used (crude and prepared) was $4.29 in 1952, compared with $4.21 in 1951 and $3.00 in 1950.

## Standard Sulphur Company To Start Production Soon

Gilbert B. Ebard Sr., president of the Standard Sulphur Company, recently announced the completion of a second production well at Damon Mound, Brazoria County, Tex. He added that preparations had been made for moving the drilling rig to a third location.

Standard Sulphur, formed by a group of Houston and Rosenberg businessmen and Eastern investment bankers, owns an 800-acre leasehold in the Damon Mound area. The firm's $450,000 plant is nearing completion, and it is expected that first plant testing operations will begin in the immediate future.

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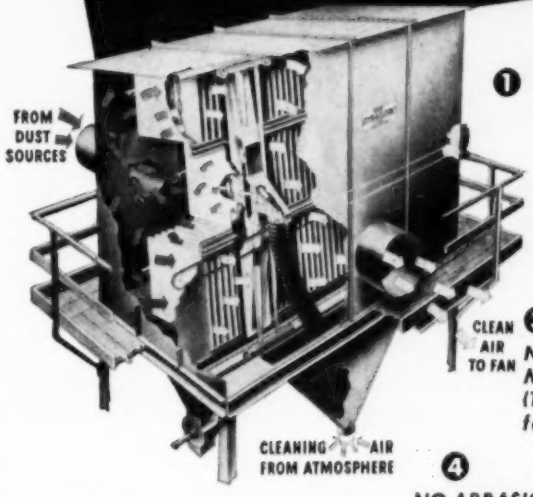
The Oolitic Ground Limestone Company, Bedford, Ind., operated by R. H. Giliatt and Al Medaugh, has added fluxing stone, crushed stone, and rip rap to its line. The plant also produces agricultural limestone.


THE DYNACLONE®

PATENTED

The ULTIMATE in Dust Filters




1. CONSTANT SUCTION at dust sources.
2. SELF CLEANING for continuous operation.
3. NO AUXILIARY MOTORS or BLOWERS (The main operating fan does the cleaning).
4. NO ABRASION of BAGS by the CLEANER.
5. LESS OVERALL HEIGHT and FLOOR SPACE.

HOW IT OPERATES

(a) Dust laden air is drawn in from the dust sources as indicated by the shaded arrows.

(b) It is diffused into the dust chamber by the baffle plate.

(c) It is then drawn through the fabric of the filter bags and is cleaned as shown by the clear arrows.

(d) Clean air passes out of the case and goes to the suction fan.

(e) Concurrently, the traveler moves back and forth across the dust wall registering successively with one bag at a time.

(f) The suction which exists in the dust chamber draws a blast of atmosphereic air through the bag in reverse directions and cleans that bag. (No shaking.)

Control your industrial dust better, for less — with the Sly Dynaclone. May we explain how?

SEND FOR BULLETIN NO. 102

THE W. W. SLY MANUFACTURING CO.

4745 TRAIN AVENUE • CLEVELAND 2, OHIO

New York • Chicago • Philadelphia • Syracuse • Detroit • Buffalo
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SLY PIONEERS & LEADERS in INDUSTRIAL DUST CONTROL

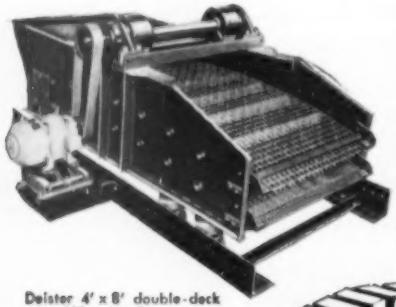
J & K STONE'S
DEISTER LINE-UP:
1. 3' x 5' single-deck Scalping Screen.
2. 4' x 8' single-deck Scalping Screen.
3. 4' x 8' triple-deck Vibrating Screen.
4. 4' x 8' double-deck Vibrating Screen.
5. 4' x 8' triple-deck Vibrating Screen.
6. New 4' x 8' triple-deck Vibrating Screen currently being installed.
1,500 TONS
per shift, 7 sizes from
FIVE* DEISTER SCREENS
1
2
6
3
4
5

## ...including 300 tons ag-lime without blinding!

Performance facts, worth reading twice... from J & K Stone Company's 100% Deister-equipped plant at Muncie, Ind. Partner-owners Kenneth K. and F. W. (Jake) Irving are using *14 Deister Screens* at present—five at Muncie, the others at their quarry near Eaton, Ind., and the J & K gravel pit north of Muncie on Highway 3.

"High-speed performance—easy cloth-changing—and *no breakdowns* are why we've standardized on Deister Screens", says Kenneth Irving; "and after 28 years of using Deisters, we ought to know! Of the five Deisters in our Muncie operation—ranging from 1 to 8 years old—none has given any trouble. We're getting 40% ag-lime—without blinding. That's why there's a *sixth* Deister going in here—right away!"

The Deister performance facts from J & K are part of a long list from the Deister customer files—including many operations with problems similar to yours. Write now for specific information on how Deister Vibrating Screens can step up your production, reduce maintenance costs—and produce *better* sizing, *cheaper!*



Deister 4' x 8' double-deck Vibrating Screen

DEISTER SCREENS

DEISTER MACHINE COMPANY
FORT WAYNE 4, INDIANA


### Decline of 29 Percent Noted In 1952 U. S. Clay Production

Clay production decreased 29 percent in 1952, according to reports of producers to the U. S. Bureau of Mines. The total output was 42,193,221 tons.

Most users of clay registered decreases. Increases in 1952 from 1951 were shown by the following: high-grade tile, 31 percent; architectural terra cotta, 223 percent; rubber, 8 percent; linoleum, 5 percent; paints, 43 percent; cement, 8 percent; chemicals, 4 percent; and filler other than paper or paint, 36 percent.

Kaolin sales decreased 2 percent and ball clay sales 11 percent in tonnage in 1952, compared with 1951, but the value of ball clay in 1952 was greater than in 1951.

Bentonite producers enjoyed the banner year in the history of the industry. Output increased 17 percent in tonnage and 19 percent in value over 1951. The foundry and petroleum industries accounted for 95 percent of total tonnage—rotary-drilling mud represented 50 percent (705,280 short tons); filtering and decolorizing of oils, 22 percent (307,940 short tons); and foundry-sand bond, 22 percent (322,746 short tons).

Production of fuller's earth in 1952 decreased 12 percent from 1951 but was 7 percent above the 1950 figure. Fuller's earth consumed in mineral-oil refining in 1952 totaled 136,199 short tons, or 32 percent of the total output, compared with 36 percent in 1951, 40 percent in 1950, and 47 percent in 1949. Absorbent uses accounted for 101,081 short tons (24 percent of the total compared with 20 percent in 1951, 21 percent in 1950, and 22 percent in 1949); insecticides, 76,116 short tons (18 percent compared with 18 percent in 1951 and also in 1950, and 12 percent in 1949); rotary-drilling mud, 64,072 short tons (15 percent compared with 16 percent in 1951, 10 percent in 1950, and 9 percent in 1949); and vegetable oil, 18,359 short tons (6 percent compared to 4 percent in 1951, 5 percent in 1950, and 6 percent in 1949). The remainder was in other filtering and clarifying uses, binders, and unspecified uses.

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Copies of the *Review of A.S.T.M. Research*, published by the American Society for Testing Materials, are now available to our readers, without charge. This material, prepared by the A.S.T.M. Administrative Committee on Research, summarizes the work of the various technical committees of the society as of May, 1953. The 22-page pamphlet may be obtained from A.S.T.M. headquarters, 1916 Race Street, Philadelphia 3, Pa.

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Brown, Boveri & Cie., A.G., of Germany was awarded a contract for the construction of a cement plant in India for the firm of Friedrich Krupp, Essen, Germany. Construction has begun on the facilities at a site 450 kilometers south of Bombay near one of India's largest limestone deposits. The plant will have an estimated daily output of 300 tons.

# Personal Mention

Material Service Corporation of Chicago has announced three personnel advancements.

LESTER CROWN, vice-president of the corporation's subsidiary Marblehead Lime Company and director of both the Empire State Building Corporation and the Stanley Warner Corporation, was elected vice-president.

JOSEPH W. LEAHY, formerly general auditor of Montgomery Ward & Company, was appointed assistant comptroller.

JOSEPH L. TRISCHAN of the accounting department has been elected assistant treasurer.

The appointment of A. M. CAITO as works manager of Basic Refractories, Inc., Maple Grove and Bettsville, Ohio, operations, was announced by Max Muller, vice-president, operations and engineering. Mr. Caito joined Basic's research and development department in 1941. After his return from three years in the armed services (1942-45) he was transferred to the production department. Just prior to his recent promotion he was production manager.

THOMAS M. WARE, vice-president, engineering, of International Minerals and Chemical Corporation, was recently elected a director of Dunlap & Associates, Stamford, Conn. Mr. Ware has been serving International in an engineering capacity since 1948. Previously he had been associated with the Lockheed Aircraft Corporation, Radioplane Company of Van Nuys, Calif., and George Fry & Associates. He also served in the Office of Naval Research.

C. E. MEGINNIS, C. VICTOR BOLLES, and E. KYLE RUBLE were recently appointed to posts heading three new sales offices of the Industrial Chemicals Division, The Davison Chemical Corporation, Baltimore, Md.

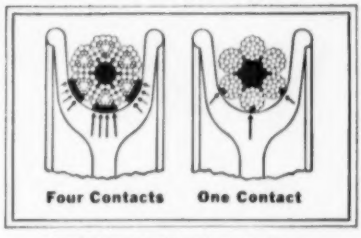
Mr. Meginnis will be at 19 S. LaSalle Street, Chicago; Mr. Bolles at Lake Charles, La.; and Mr. Ruble at the Atlas Building, Columbus, Ohio. Each office is the center of a sales region covering several states. These territories were formerly serviced out of Baltimore headquarters. The new offices were made necessary by the firm's sales expansion.

FLOYD BOWEN, who was formerly manager of the Tennessee departments of the International Minerals and Chemical Corporation, has been made manager of the firm's Rock Phosphates Department in Florida.

C. LESTER RICHARDS succeeds Mr. Bowen as manager of the Tennessee departments.

# Engineer answers vital questions about the strongest wire rope made—Flattened Strand

**What is Hercules® flattened strand wire rope? Why does it outperform round strand rope by 2 to 1 or more? Can you use it? Walter C. Richards, chief engineer, Leschen Wire Rope Division, tells you the answers.**




**With Flattened Strand, notice how four wires per strand contact sheave grooves —reducing rope and equipment wear.**

More and more wire rope users are continually experiencing or hearing about spectacular performances of Hercules Flattened Strand wire rope. The explanation is clear.

First, Hercules Flattened Strand is a Super-rope because it packs 10% more steel than any round strand rope of the same size. It's 10% stronger... 10% safer.

Second, Hercules Flattened Strand wears longer and more evenly. That's because there are four wires per strand contacting sheave grooves instead of one.

Third, Hercules Flattened Strand resists crushing and internal strand-cutting, because strands rest snugly against each other, keystone fashion, with less internal pressure or friction.

Fourth, Hercules Flattened Strand prolongs its own life and the life of equipment, because the relatively smooth surface of the rope prevents corrugating and wear on sheave grooves.

**Can you use it?**

It's a known, proved fact that no other wire rope made can equal Flattened Strand on applications such as hot ladle cranes, skip hoists, and dredge ropes. It is also best on a variety of other equipment both large and small. For many uses, it is truly a Super-rope.

But, the question is, can *you* use it to advantage? That can be answered only by a qualified wire rope engineer who is thoroughly acquainted with the characteristics and proper uses of Flattened Strand rope.

**Check with the authority**

That means, check with Leschen. It's wise to do so because Leschen pioneered and perfected Flattened Strand wire rope. Leschen developed special machines to make it. Leschen conducts continuing research on correct uses. Leschen is the authority.

If you discover you can use this Super-rope—Hercules Flattened Strand—you'll soon begin saving time, labor and money. Why not investigate *now?*

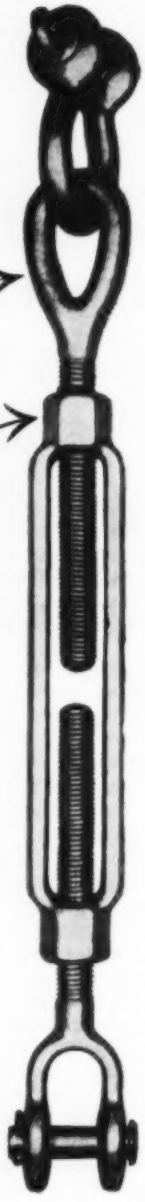
**LESCHEN WIRE ROPE DIVISION** · ST. LOUIS 12, MISSOURI
The Watson-Stillman Company
(A SUBSIDIARY OF H. K. PORTER COMPANY, INC.)

# IMPROVED TURNBUCKLES

have

NEW EYE DESIGN

HEX ENDS



Laughlin's exclusive pear shaped turnbuckle eyes were designed to eliminate need for special shapes. It's the only eye that will take the ear of a shackle one size smaller than the turnbuckle. The shape makes it stronger than a round eye. It looks better and works better. The next time you need turnbuckles order Laughlin and see for yourself.

All Laughlin turnbuckles have hexagon ends and rugged reins. Easily adjusted with a wrench. Wheelabrated finish dipped in a rust preventive or hot dip galvanized.

**FOR SAFETY'S SAKE SAY**

**LAUGHLIN**

*The Full Line of Wire Rope & Chain Fittings*

THE THOMAS LAUGHLIN CO., 1122 Fore St., Portland, Me.


General Refractories Company of Philadelphia recently announced a number of executive changes in top management positions.

HARRY T. GRAHAM, Ardmore, Pa., has been named vice-president. Mr. Graham has served as general sales manager until his recent promotion, and he will continue to be active in supervision of the sales group in addition to his new administrative duties.

RICHARD E. LONGACRE, Wayne, Pa., has become general sales manager of the company.

HERBERT F. GREENE, of Bala-Cynwyd, Pa., was made a vice-president, effective immediately. He was formerly works manager. GORDON C. FAY, Philadelphia, has been selected to succeed Mr. Greene.

JOHN W. WYCKOFF is now responsible for operations of the Glacier Sand & Gravel Company at Steilacoom, Wash., as plant superintendent. Mr. Wyckoff has been associated with Glacier for the last five years as engineer at Steilacoom.

L. A. BEEGHLY, president of the Standard Slag Company, Youngstown, Ohio, has been elected a trustee of the Mahoning Valley Industrial Council.

The resignation of JOHN W. RUTLAND, general manager of the Plant Food Division, International Minerals & Chemical Corporation, has been announced. Mr. Rutland left International to devote full time to the Smoky Mountains Fertilizer Company of Waynesville, N. C., of which he is one of the principal owners.

Appointment of FRANCIS P. LABELLE as assistant chief engineer and CLYDE P. ORR as chief chemical engineer of Monsanto Chemical Company's Phosphate Division at Anniston Ala., has been announced.

Both appointments were effective September 8. Mr. LaBelle, who has been chief chemical engineer of the division in Anniston, succeeds D. A. ROPER, recently named assistant research director of the division. Mr. Orr has been assistant manager of the process section of Monsanto's General Engineering Department in St. Louis.

B. J. STEGER, controller of The France Stone Company, Toledo, Ohio, has been elected treasurer of the Toledo Control of the Controllers Institute of America.

At the annual meeting of the organization's Philadelphia Control, WARREN E. SAWYER JR., treasurer of the Attapulgus Clay Company, was named a director. KENNETH A. STOTLER, secretary-treasurer of the Pioneer Sand & Gravel Company, Seattle, was similarly honored by the Institute's local branch in that city.

JACOB B. ZOOK, plant manager of the Lehigh Portland Cement Company, Buffalo, N. Y., was presented a life membership in the American Society of Safety Engineers by the group's Niagara Frontier Chapter at a testimonial luncheon in Buffalo. Mr. Zook came to Buffalo in 1926 as chief engineer and safety director of the Great Lakes Portland Cement Corporation.

JOHN W. BROWN, vice-president in charge of dealer sales of the National Gypsum Company, was elected president of the National Mineral Wool Association at the group's annual meeting at Hot Springs, Va.

E. K. CLARK, vice-president of Johns-Manville Sales Corporation, New York, was named vice-president; and PAUL A. VOIGT, also of Johns-Manville, was re-elected treasurer.

Three appointments have been announced by the United States Gypsum Company. CHARLES W. DESGREY, formerly operations manager for the western gypsum and lime region, has assumed the newly-created post of general manager of operations.

J. H. SETINSKY, general production manager of insulation, metal, paper, and roofing divisions, will succeed Mr. Desgrey in his former post.

C. H. ROSIER, manager of the engineering department, will assume the former post of Mr. Setinsky. All three have their headquarters in Chicago.

BEV BROWER has been named to the newly-created position of advertising manager for asbestos products by the National Gypsum Company. Prior to joining National Gypsum Company, Mr. Brower was assistant to the advertising and sales promotion manager of Toastmaster Products Division of McGraw Electric Company.

S. A. GRETENCOURT, who was formerly manager of the Ideal Cement Company's plant at Canon City, Colo., has been named to the staff of the general superintendent in Denver.

HORACE STRAIGHT, formerly assistant plant manager at the Devil's Slide, Utah, plant, is now plant manager there.

A. W. HOOTON, who was manager at Devil's Slide, is the new manager of the Canon City plant.

WILSON MCCARTHY, president of the Denver and Rio Grande Western Railroad, was recently named to the board of directors of the Ideal Cement Company. He replaces Arthur G. Rydstrom, who resigned.

RALPH J. MCNERNEY of Sioux Falls, S. D., has been appointed by Governor Sigurd Anderson to the state cement commission, to fill the unexpired term of the late E. H. Kuhlman. The term of Mr. Kuhlman expires on July 1, 1955.

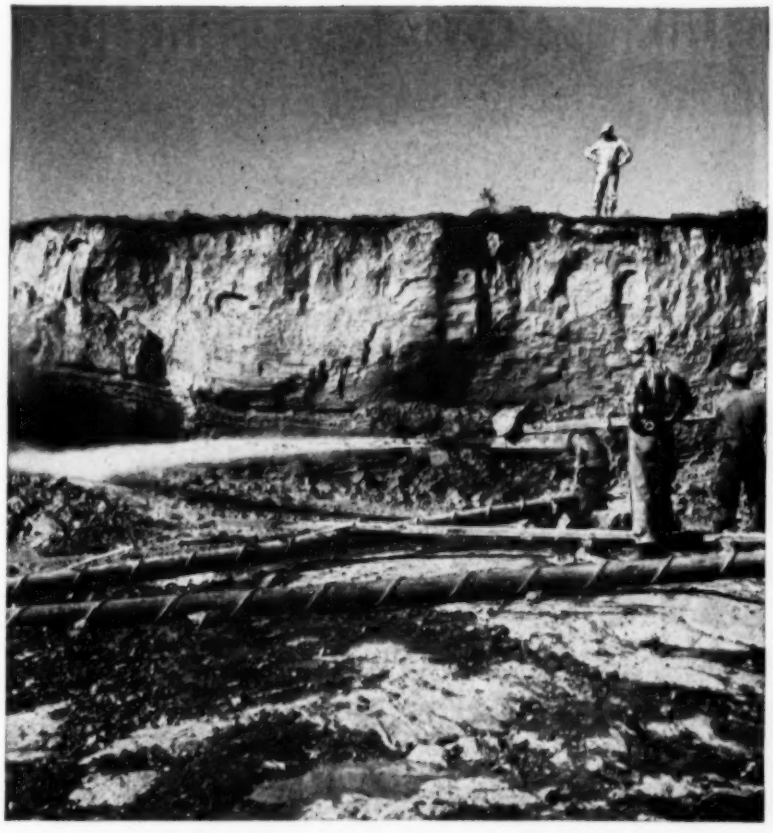
National Gypsum Company has announced the following promotions among its plant personnel:

FRANK L. BREEN, formerly plant manager at the company's Trenton, N. J., plant, has been promoted to the position of technical field service representative in the research department.

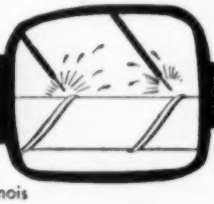
ROBERT L. KILGORE replaces Mr. Breen. He was previously plant manager at Dover, N. J.

HENRY J. REED will assume managership of the Dover plant.


# MAKING A GIANT EAT THE DIRT

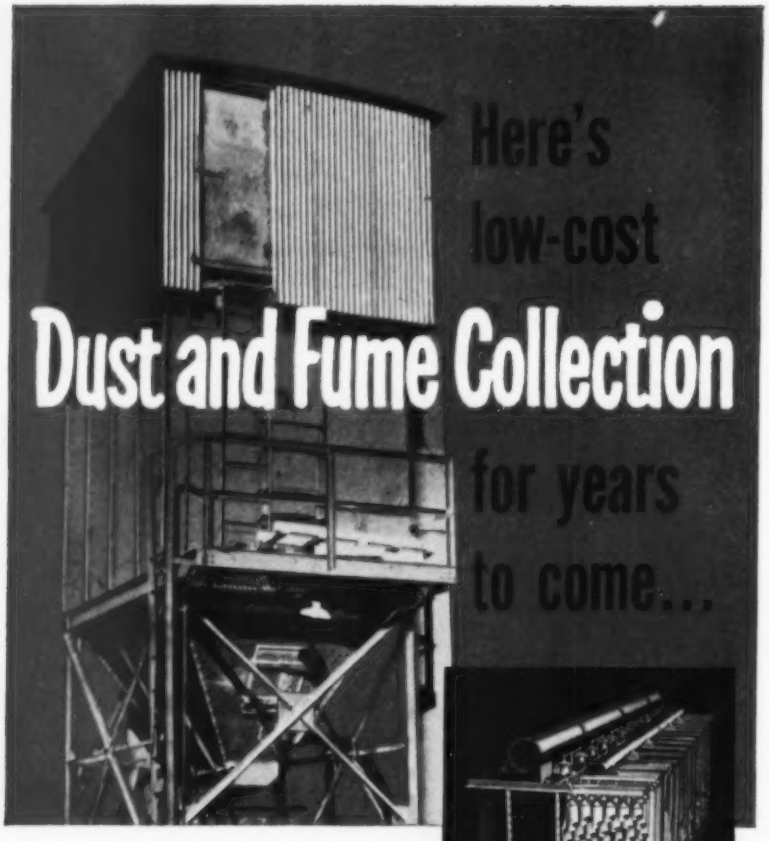


When the pressure is on in hydraulic operations, you need lines that are extra strong, safe, leaktight. That's the reason mining engineers depend on Naylor, the distinctive lockseamed, spiralwelded light-wall pipe. It's easy to handle and install, especially with Naylor Wedge-Lock Couplings to speed connections. Its structure makes it ideal for heavy-duty service like this. Sizes from 4" to 30" in diameter. Write for Bulletins No. 507 and No. 513.



**NAYLOR PIPE**

**NAYLOR PIPE COMPANY**
1257 East 92nd Street, Chicago 19, Illinois
*New York Office: 350 Madison Avenue, New York 17, New York*




**Norblo**

***Automatic***

**Bag Type Arresters**

Norblo equipment is based on sound, experienced engineering and takes full account of the *scale* of your operation as well as *time* factors, so that Norblo performance can be *guaranteed.*

Norblo arrester design is based on multiples of a basic, standardized compartment. Bag cleaning—fully automatic—is cyclic and periodic, taking only a few seconds for each compartment. In continuous, heavy duty operation, full calculated capacity of Norblo equipment is always available, and investment for equipment of any desired capacity is held to a minimum.

Norblo gives you all four essentials of low cost operation for years to come—advanced design, high efficiency, long life and low maintenance. Write for Bulletin 164-4.

**The Northern Blower Company**

**Engineered Dust Collection Systems for All Industries**

**6407 Barberton Ave. OLympic 1-1300 Cleveland 2, Ohio**


# Obituaries

EDWIN JAMES GOODPASTOR, for many years general manager, director, then executive vice president of Pacific Coast Aggregates, Inc., in San Francisco, died in Glendale, Calif. at 73. Three years ago he went into semi-retirement by becoming manager of the Sacramento Valley district, moving back to Sacramento, which had been his home between 1908 and 1916 when he was general manager of Natomas Company's rock department. In 1916 Mr. Goodpastor organized the Coast Rock and Gravel Company of San Francisco and in 1919 the Santa Clara Rock and Sand Co., which was sold to Pacific Coast Aggregates a few years later when Mr. Goodpastor became an official of that firm.

WILLIAM S. MILLER, retired mining engineer died at Tompkins Cove, N. Y. after a long illness. He was 85. Mr. Miller spent several years as superintendent of the Tompkins Cove Stone Company and was an active member of the International Quarrymen's Association. He received a citation from McGill University, Montreal, for his assistance and guidance in research work on silicosis as an occupational hazard to quarry workers.

MARION O. LAND, president of the Pioneer Sand Company, died at St. Joseph, Mo., on August 26 at the age of 73 years. Death came unexpectedly while he was on a fishing trip. Earlier in his life, Mr. Land had been president of several other business concerns, including the Red-E Mixed Concrete Company and the Land Construction Company.

OTTO W. ROEDIGER, 67, a plant foreman at the Columbia Quarry, Columbia, Ill., collapsed and died at his home on September 20. He had been employed by the firm for more than 40 years, and had served as a foreman for the last ten years.

GAYLORD E. GRAY, 60, president of the Des Moines Sand & Fuel Company and of the Central Iowa Sand & Gravel Company, Des Moines, Iowa, died recently in a hospital of that city. He had been engaged in the gravel business since 1915.

FLOYD H. COMPTON, chief engineer for the Penn-Dixie Cement Corporation, died on September 23. From 1920 to 1922 Mr. Compton was associated with the Portland Cement Association as conservation engineer. He was employed by the Louisville Cement Company as assistant superintendent, superintendent, and chief engineer during the years from 1922 to 1937. In the latter year he became general superintendent of the plants of the Allentown Portland Cement Company and the Valley Forge Cement Company, a post he held until 1950. He was a member of the Professional Engineers of Pennsylvania.

ERNEST V. LAPLANTE, a sales executive of the Riverside Cement Company, San Francisco, Calif., died recently in Los Angeles. He was 61 years of age.

WILLIAM J. KELLEHER, New York district sales manager of the Allentown Portland Cement Company, died recently at the age of 59 years in a Nassau hospital. Mr. Kelleher was mayor of Williston Park, and president of the Nassau County Village Officials Association.

AMANDUS J. FOX, district sales manager for the Philip Carey Manufacturing Company at Birmingham, Ala., died recently in a Cincinnati, Ohio, hospital. He began working for the Carey Company 40 years ago and held posts in Cincinnati, Little Rock, Ark., Dallas, Tex., Rutherford, N. J., and Chattanooga, Tenn., before going to Birmingham. Mr. Fox was 61 years old.

JOHN W. BROWN, 70, president of the Muskogee Sand Company, Muskogee, Okla., died in that city recently. He organized his company in 1912 after spending several years as a teacher and then as a bookkeeper.

BERT E. DODGE, a structural engineer for the Universal Atlas Cement Company, died on August 18, 1953, at Montclair, N. J., after an illness of one month. He was 65 years old.

GEORGE M. BROWN, who organized the Certain-teed Products Corporation, Ardmore, Pa., died at a New York hospital at the age of 86 years. Mr. Brown became president of Certain-teed in 1917 and was chairman of the board when he retired in 1936. He formed the General Roofing Company in St. Louis in 1905. The firm was reorganized as Certain-teed Products Corp. in 1917.

FRANK I. HEFFERNAN, who was plant manager of the Glacier Sand & Gravel Company's operation at Steilacoom, Wash., for more than 25 years, died of a heart attack in Tacoma on August 28. Mr. Heffernan had suffered a heart seizure last May, but recovered and seemed to be in good health. He was known throughout the industry for his technical knowledge of gravel plant procedures.

KIRK G. HOWARD, chief electrician for the Peerless Cement Corporation at Detroit for the last 28 years, died recently at his home in Dearborn, Mich., following an extended illness. He was 61 years old. Born in Kansas City, Mo., Mr. Howard joined the Peerless organization in 1925. He gained wide recognition for his outstanding ability as an electrical technician.

KNOTT RANKIN, president of the Rockland-Rockport Lime Company, Inc., Rockland, Maine, died unexpectedly on August 23. Mr. Rankin had been a member of the board of directors of the National Agricultural Limestone Institute, Inc., since the last annual meeting.

Where you must have the Safety of a Burst-Proof Hose and the extreme flexibility that only Republic WIRETEX can give . . . a hose that will **safely** carry superheated steam up to 388° F. . . . then WIRETEX Steam Hose will meet your specifications —

**and with more to spare**

Republic WIRETEX is built in 60-foot **Economy Lengths.** With WIRETEX, you save money when you buy; time and money when you use it! Get the facts today! Other Republic WIRETEX Hoses are available in all standard (⅜" to 2") sizes for handling Air, Steam, Hydraulic Fluids, Greases and other Petroleum Products.

Your local Republic Distributor can help you plan, select, apply and maintain any Product of Industrial Rubber. If he is not listed in the yellow section of your telephone directory, write us for his name and address.

**REPUBLIC RUBBER DIVISION**

LEE RUBBER & TIRE CORPORATION, YOUNGSTOWN 1, OHIO

INDUSTRIAL RUBBER PRODUCTS

EXTRUDED AND MOLDED PRODUCTS HOSE PACKING BELTING

# legal decisions

By LEO T. PARKER
Attorney at Law
Cincinnati, Ohio

## Fair Labor Standards Act

Recently the Supreme Court of the United States established new law to the effect that all manufacturers, processors, and producers of nonmetallic materials must pay wages specified by the Fair Labor Standards Act, although the materials are sold exclusively to purchasers within the state.

For example, in *Thomas v. Hempt Brothers,* 73 S. C. Reporter 568, it was shown that a quarry company sells stone and crushed rock used in the manufacture of concrete. The materials are sold to railroads, highway departments, etc.

The Supreme Court of the United States held that although the deliveries of the materials were made to purchasers within the state, yet the employees of the quarry must be paid wages specified by the Fair Labor Standards Act. This was so because the purchasers used the materials in different states, which affected interstate commerce.

For comparison, see *Alstate Construction Company v. Durkin,* 73 S. C. Reporter 565. In this case the Supreme Court of the United States held that although a seller transacts strictly intrastate business, yet if purchasers use the purchased materials in interstate commerce, the seller is within the scope of the Fair Labor Standards Act.

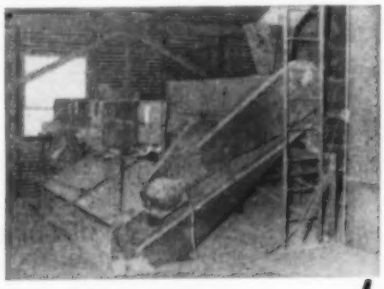
## Tax Assessor Fixes Values

According to a late higher court decision, mining nonmetallic materials is not a manufacturing process. Hence, although a state law exempts manufactured materials from taxation, mined or quarried materials are taxable at their full value.

For example, in *Northwestern States Portland Cement Company, v. Board,* 58 N. W. (2d) 15, the testimony showed facts as follows: The Northwestern States Portland Cement Company operates a large plant to manufacture portland cement. It owns a substantial amount of land underlaid with both limestone and clay which it quarries and excavates for use in the manufacture of cement in the plant located on this land. The tax assessor made an assessment for taxes against a quantity of finished cement in the sum of $22,173 and a quantity of raw material in the factory, in the process of being made into cement, at $3,387. The testimony showed that the assessor valued the average inventories of finished cement and clinker each at 20 cents a barrel, the limestone at 60 cents a ton, and the clay in storage at 40 cents a ton. The assessor arrived at these valuations by estimating the value of the clay and limestone entering into the finished cement and the goods in process at the time the same entered the primary crusher at the manufacturing plant.

The cement company appealed to the court, contending that the assessor's method of arriving at the values was unfair and incorrect because the average full and fair value of all such limestone and clay before the same was quarried was 5.42 cents per ton for the limestone, and 8.42 cents per ton for the clay, and that the average inventory value of finished cement was $5.94 a barrel. The higher court refused to agree with these contentions and approved the assessor's valuation, saying:

"The fact that labor may have increased the value or form of the original raw matter is not material. The cost of getting its limestone and clay to its crushers is increased by the labor in getting it there, and that labor of man and machine is a factor in determining the assessed value of the finished or unfinished product."

**FlexElex**
**HEATED SCREENS**

**LOWER THE BOOM ON PRODUCTION COSTS**

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For comparison see *Iowa Limestone Company v. Cook,* 211 Iowa 534. In this case the court held that blasting stone and breaking it into merchantable size was not a manufacturing process, and that the material is taxable at its actual value.

### Cannot Sue Jointly

Recently a higher court held that owners of residences cannot join in a suit to prevent a cement company from operating its business of manufacturing cement to the detriment of the property owners.

For example, in *Bajorek v. Kurtz,* 55 N. W. (2d) 727, it was shown that one Kurtz is engaged in the manufacture of cement and concrete products. In connection with the business he operates heavy trucks in delivering cement and other materials. These operations cause loud and rasping noises, vibrations of the earth, and undesirable cement dust. Several nearby home owners jointly filed a suit. They asked the court to award them damages and also to issue an injunction to prevent Kurtz from operating his business in the residential area.

The higher court held that these several property owners cannot maintain such a suit against Kurtz, although his operations are unlawful. The court said:

"It is our conclusion that the plaintiffs (home owners) were not entitled to combine in one action their individual claims against the defendant (Kurtz)."

This was so although the home owners proved they had occupied their respective homes for residential purposes for a number of year before Kurtz started his operations.

### Too Much Night Noise

A reader asked this question: "Can the owner of a nearby dwelling stop a company from loading and unloading materials at night?"

A late higher court decision answered this question in the affirmative, if the noises disturb the sleep of the home owner.

For illustration, in *Malm v. Dubrey,* 88 N. E. (2d) 900, the testimony showed facts as follows: The Dubrey Company in unloading and loading freight and materials uses a heavy steel plate as a ramp between its trucks and the loading platform. These operations were carried on both day and night, and disturbed the sleep of home owners nearby. Also, the company has a repair shop on the premises, and its trucks are tested on the premises with motors racing, and in the course of repairs hammers are used which also disturb sleep.

In subsequent litigation, the higher court ordered the Dubrey Company to conduct its business "between the hours of 12 p.m. and 6 a.m." so as to cause no noise "which interferes with the ability of" nearby owners of dwellings from sleeping between these hours. The court said:

"Noise which constitutes an annoyance to a person of ordinary sensibility to sound, such as materially to interfere with the ordinary comforts of life and impair the reasonable enjoyment of his habitation, is a nuisance. The defendant (Dubrey Company) is entitled to a reasonable use of

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their property. It is plain, however, that it cannot be so used as to disturb the plaintiffs, who have a right to sleep at night in their own homes."

## Personal Liability of Employee

A question uppermost in the minds of many employers is: "When and under what conditions can an employee be held personally liable for his mistakes, errors, and carelessness when making a contract?"

Two employers stated to me that they had disagreeable experiences in this respect, with employees who were unusually negligent because they had better paying jobs in view. These same readers were anxious to know a legal rule to determine whether an employer is liable for acts or contracts made by an employee.

I have reviewed several higher court decisions and here is the law: "An employee is personally responsible on a contract (1) if he knowingly makes a false written or oral statement or representation of his authority with intent to deceive a person who intends to transact business with the employer; (2) if he performs any unlawful act with or without authority of the employer; (3) if he performs a damaging or injurious act, believing that he had authority, although actually has none; (4) if he wilfully performs an act which results in damage to any one; (5) if he does damaging acts outside his scope of authority, although while so doing he intends to render the employer a valuable service; (6) if he intentionally or otherwise assumes an obligation for the employer; (7) if he unintentionally but legally assumes an obligation while performing services for his employer."

A review of late higher court cases disclosed an important rule by which it may be determined when a representative or other employee may make a contract which binds his employer. He may do so *only* under the following circumstances:

(1) An agent or other employee can make a valid contract for an employer *only* when the contract is *within the limit* of the agent's authority.

(2) Although persons dealing with an employee must inquire ordinarily as to the extent of the authority, this is not true when the employer sends the employee to perform an act or make a contract with *apparent* broad authority.

(3) When the authority to perform an act is given by an employer to an employee or representative, the employee may do the work or service as he may deem best.

(4) If the employee is a "general" agent, his employer is liable on all contracts made within the scope of the business or department of the business he manages.

(5) If the employee is a "special" agent, such as a bookkeeper, a salesman, a stenographer, a mechanic, a cashier, or the like, he can make *no* valid contract binding his employer, unless the employer *gives notification* that the "special" agent has broad powers or authority to make valid and binding contracts.

The above rules of law are approved by the leading higher courts.

## Duty of Telegraph Company

A reader asked this question: "If a telegraph company makes an error when transmitting a message, can the sender sue and recover damages?"

According to late higher court decisions, the answer is no.

In all law suits there must be at least two litigants. Generally speaking, both believe they will win a favorable verdict, otherwise the ultimate loser wisely would discontinue the suit. It is unwise to sue a telegraph company which fails to transmit a telegram correctly.

For example, in *Einbinder v. Western Union Telegraph Company*, 30 S.E. (2d) 765, it was shown that a telegraph company incorrectly transmitted a telegram and great damage resulted to the sender, who sued the telegraph company to recover damages.

The higher court refused to allow the sender of the telegram any damages and said:

"Damages which would not arise in the usual course of things from a breach of contract, but which do arise from circumstances peculiar to the special case, are not recoverable unless the special circumstances are known to the person who has broken the contract."

In other words, although the telegraph company's agent negligently sent an incorrect telegram which resulted in financial loss to the sender, the latter could not recover damages.

Also, see *Matheson v. Southern Railway*, 79 S.C. 155, 60 S.E. 437; *Kolb v. Southern Railway*, 81 S.C. 536, 62 S.E. 872; and *Traywick v. Southern Railway*, 50 S.E. 549.

These higher courts held that a telegraph company is not liable in damages for transmitting an incorrect message, unless the sender pays an *extra* charge to verify the message, and therefore avoid possibilities of errors.

## Purchaser Is Implicated

Another reader asks this question: "If a purchaser of nonmetallic minerals accepts and pays for shipments or deliveries of materials not strictly in accordance with the terms of a contract between him and a seller, can the seller later sue the purchaser and recover extra payments?"

According to higher court decisions, the answer is no.

Modern courts consistently hold that if a purchaser accepts a part of an order for merchandise, he *cannot* refuse to accept and pay for the balance of the merchandise. Moreover, modern courts hold that if a purchaser fails to complain of unsatisfactory merchandise within a reasonable period after he receives it, he cannot *later* make any valid complaint.

For illustration, in *Murtishaw v. Glassell-Taylor Company*, 18 So. (2d) 196, it was shown that a buyer and seller entered into a contract by the terms of which the purchaser agreed to purchase a stipulated quantity of crushed rock at $2.50 per cubic yard. Later, after the purchaser had accepted several deliveries of the rock, litigation arose between the buyer and the seller over whether a cubic yard of rock contained 2,700 or 3,000 lb. Subsequently, the seller sued the purchaser to recover payment for all deliveries on the basis of 2,700 lb. to the cubic yard.

The higher court rendered a verdict in favor of the seller mostly because at no time was the delivered rock measured by the purchaser. The court explained that this fact, with other testimony that the purchaser had not complained about prior bills on the basis of 2,700 lb. per cu. yd., indicated that the purchaser *impliedly* consented that a cubic yard of rock weight was 2,700 lb.

Hence, the court based its decision upon the fact that failure of the purchaser to complain and payments made on receiving the various bills mailed by the seller—showing 2,700 lb. per cubic yard—implied that the purchaser accepted all the rock on the basis of 2,700 lb. per cu. yd.

## Engineer Increases Cost

A reader asked this interesting question: "If an engineer increases a supplier's cost for materials, can he recover extra payment?"

Various higher courts have held that when a person enters into a contract to do something by direction of the other party, and it is not done in the manner stipulated in the contract, the one performing the contract may recover a reasonable "extra" payment.

For illustration, in *Maine Sand & Gravel Co. v. Green & Wilson Inc.*, 177 Atl. 185, the testimony showed facts as follows: A seller of cement and a contractor made a contract which specified that if the state engineers directed the use of 5¼ bags of cement to the yard of concrete then "it is assumed" that each yard of concrete shall contain 1,155 lb. of sand of the specified value and 2,152 lb. of gravel of the specified value.

The state engineers increased the proportion of cement, and litigation developed over the question whether the seller should receive extra payments for the increased material which he supplied.

The higher court held that the seller was entitled to be paid for the quantities of material actually proved to have been furnished, and at the price specified in the contract.

On the other hand, it is well that readers realize that the higher courts are in accord with the proposition that all sane adults are responsible for lawful contracts which they may wilfully sign. In other words, a court will not declare a contract void on the ground that one of the contracting parties deserves protection due to his ignorance. If two parties sign a contract, therefore, to the effect that the seller will deliver material at a stated price, irrespective of the quality ordered by the purchaser, such a contract is valid. However, without such a clause the courts assume that a seller impliedly agrees to pay a higher price for merchandise having a higher quality than the merchandise specified in the contract.

## Doctor's Testimony Is Secondary

According to a late higher court decision, testimony of a doctor is secondary, in deciding whether an injured employe is entitled to receive compensation.

For illustration, in *Alexander v. Covel*

*Manufacturing Company*, 57 N. W. (2d) 324, it was shown that in April an employee while at work, was hit in the left eye by sand and was sent to a medical doctor for treatment. The doctor found no sand in his eye, but did find that he was suffering from iritis and glaucoma, and that vision in his left eye was limited to light perception. He continued to work regularly until November of that year, when his employment was terminated for reasons not related to the injury. Shortly thereafter Dr. Louiselle found a corneal ulcer and secondary glaucoma, and removed the eye after several treatments.

In subsequent litigation the higher court held that the employee was entitled to compensation under the State Workmen's Compensation Act for the loss of his eye. This was so because Dr. Louiselle testified that the corneal ulcer and the secondary glaucoma could have been caused by the sand striking the eye, although this possible causal relationship was denied by two other medical doctors. The court said:

"No person is born with a knowledge of medicine, and a doctor's conclusions must of necessity in many instances be based upon information acquired from courses outside himself."

### Wrongful Taking

Irrespective of the details of a wrongful taking or conversion of chattels, the guilty party is liable for full damages. This rule of law is applicable where one finds, steals, or otherwise illegally appropriates merchandise lawfully belonging to another.

For illustration, in *Cram v. Wells Cargo, Inc.*, 256 Pac (2d) 96, it was shown that the Nevada Rock & Sand Company purchased certain equipment on the installment payment plan. The seller for good reason repossessed the mortgaged equipment, but also took possession of other non-mortgaged equipment consisting of a tank, pump, trailer, and spare mechanical parts.

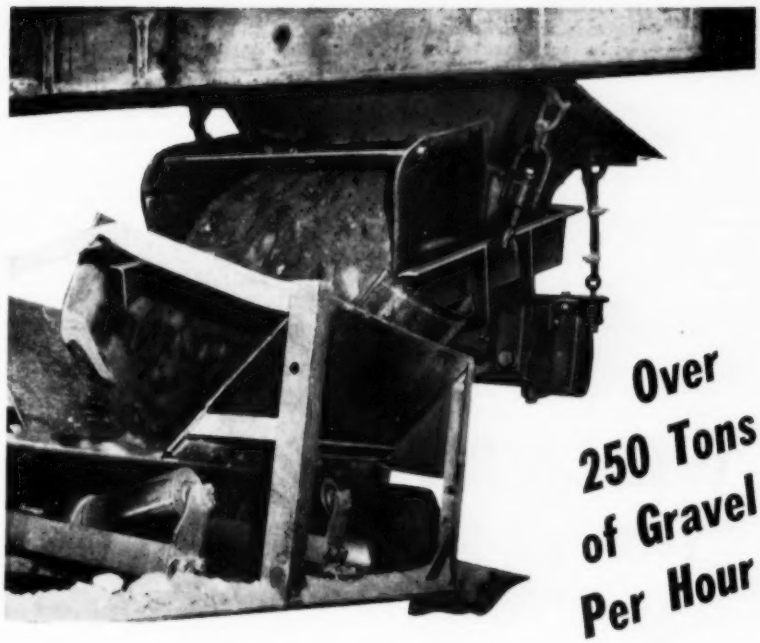
In subsequent litigation, the higher court held the seller liable in damages to the Nevada Rock & Sand Company for the full value of all the un-mortgaged equipment and accessories, plus all court costs. The court said:

"The only issue is as to the value of the property taken at the time of conversion. Appellant (Nevada Rock & Sand Company) places its value at $3,500. Wells Cargo (seller) values it at from $310 to $415."

### Trade Name Is Infringed

A few days ago I received this letter: "Recently a new company started a business in competition to me and is using a business name similar to mine. Can I have a court stop this company from using its business name which I claim confuses my customers in this area? Must I collect evidence proving that I am damaged before the court will stop this infringement?"

According to a late higher court decision, this reader can have a court injunction to stop use of this infringing name without proving that he was damaged by its use.

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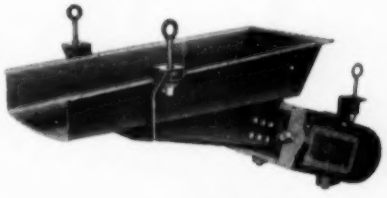

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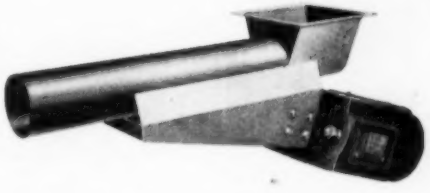

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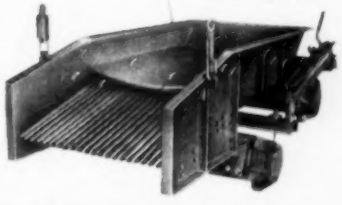

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For example, in *Walker v. Pocatello Monument Company*, 230 Pac. (2d) 701, it was shown that a company named Pocatello's Expert Monument Builders, sued the Pocatello Monument Company to enjoin the latter from using the name "Pocatello Monument Company," and for damages.

The testimony showed these facts: In 1912 one Walker started a monument business in a town named Pocatello, and began using the trade name "Pocatello's Expert Monument Builders." Many years later the Pocatello Monument Company started the business of making and selling monuments in the same town. Walker contended that the name "Pocatello Monument Company" is deceptively similar to his business name "Pocatello's Expert Monument Builders," and that the new company, the Pocatello Monument Company, infringed upon his good will and advertising that he had built up before the Pocatello Monument Company started its business.

The higher court ordered the Pocatello Monument Company to stop using its name in this town and area, and said:

"The evidence disclosed confusion in the minds of customers of both appellant (Walker) and respondent (Pocatello Monument Company) and the similarity of names in the use of the word 'Pocatello'. There would naturally be confusion and interference to an extent that appellant (Walker) is clearly entitled to an injunction, regardless of whether actual damages were shown."


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# Traffic News

## FREIGHT TRAFFIC COMMITTEE CENTRAL TERRITORY RAILROADS

**Docket 89900 (1)**—Proposed to establish on stone, fluxing, furnace or foundry, melting or refractory, unburned, in bulk, in open-top equipment, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Durbin, Ohio, to Middletown, Ohio, 139 cents gross ton.

**Docket 89901 (1)**—Proposed to establish on stone, crushed, in bulk, in open-top cars, carload, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from Georgia, Ind., to Crane, Ind., 153 cents net ton.

**Docket 89906 (2)**—Proposed to establish on lime, common, hydrated, quick or slaked, also agricultural and fluxing, carload, minimum weight in connections with rates shown under Column A, 15 tons; Column B, 25 tons. From Chicago, Ill., to Teays, Ohio, Column A, 32 cents and Column B, 25 cents. Apply rates under Column A or B, whichever may produce the lower charge.

**Docket 89908 (2)**—Establish rate on slag, crushed, (the product of iron and steel furnaces) in bulk, in open-top cars, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full visible or cubical capacity, actual weight will apply from Lordstown, Ohio, to Erie, Pa., and Fairview, Pa., 195 cents net ton; to Northeast, Pa., 207 cents net ton.

**Docket 89923 (2)**—Establish on lime, common, hydrated, quick or slaked, carload, 31 cents (minimum 25 tons) and 35 cents (minimum 15 tons) from Ludington, Mich., to Marietta, Ohio.

**Docket 89924 (1)**—Proposed to establish rate of 190 cents per gross ton on stone, fluxing furnace or foundry smelting or refractory unburned, in bulk in open-top cars, carload, minimum weight 90 percent of marked capacity of car, except that when loaded to full visible or cubical capacity, actual weight to apply from West Columbus and Marble Cliff, Ohio, to Lima, Ohio.

**Docket 89931 (2)**—It is proposed to establish rate of 37 cents (minimum 15 tons) and 31 cents (minimum 25 tons) on lime, common, hydrated, quick or slaked, carload, from Hannibal, Mo., and Marblehead and Quincy, Ill., to Teays, Ohio.

**Docket 89948 (2)**—Proposed to establish rate of 348 cents per net ton on limestone, natural, unburned, ground or pulverized, in closed cars, carload, minimum weight 30 tons, from Carey, Ohio, to Oscoda, Mich.

## GENERAL FREIGHT TRAFFIC COMMITTEE EASTERN RAILROADS

**Bulletin G-8824** (Carrier)—It is proposed to establish a rate of $1.67 per gross ton on refractory stone, unburned, crushed, in bulk, in open-top equipment, minimum weight 90 percent of marked capacity of car, from Latrobe, Pa., to Aliquippa, Pa. Subject to ExParte 175-B increase.

**Bulletin G-8884** (Carrier)—Proposed to establish rate of $3.81 per net ton in open cars and $4.14 per net ton in closed cars, on rock, gypsum, crude, carload minimum weight 90 percent of marked capacity of car used, but not less than 40 tons, from Akron, Clarence Center, Oakfield, Garbutt, Victor, Wheatland, and Wheatfield, N. Y., to Bay City, Mich. Subject to ExParte 175-B increase.

**Bulletin G-8896** (Carrier)—Proposed to establish rate of $2.43 per net ton on stone, crushed, having value for construction purposes only and not suitable for agricultural or chemical purposes, in bulk, in open-top cars, carload minimum weight 90 percent of marked capacity of car used, from Marble Cliff and West Columbus, Ohio, to East Lynn, W. Va. Rates subject to ExParte 175-B increase.

**Bulletin G-8960** (Carrier)—Proposed to establish on limestone, natural, ground or pulverized, unburned, minimum weight 30 tons from Gibsonburg, Millersville, Woodville, and Maple Grove, Ohio, on the Pennsylvania to Lancaster, N. Y., $3.22 per net ton in open cars and $3.72 per net ton in closed cars. Rates subject to ExParte 175-B increase.

**Bulletin G-8963** (Carrier)—Establish rate from Maple Grove and Narlo, Ohio, to Houston, Tex., of 55 cents and Lone Star, Tex., 49 cents per hundredweight on magnesite, dead-burned, carloads. Rates subject to ExParte 175-B increase.

**Bulletin G-8973** (Carrier)—Propsed to establish rate of $2.86 per gross ton on limestone, fluxing, carloads, in open-top cars not protected by tarpaulin or other protective covering, minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight but not less than 30 tons, shall apply, from Beachville and Ingersoll, Ont., to Canton and Massillon, Ohio. Rate not subject to ExParte 175-B increase.

**Bulletin G-8976** (Shipper)—Proposed to establish rate of $4.72 per net ton in open-top cars and $5.21 per net ton in closed cars on limestone, natural, ground or pulverized, unburned, carload minimum weight 30 tons from Carey, Ohio, to Kingsport, Tenn. Rates subject to ExParte 175-B increase.

**Bulletin G-8994** (Carrier)—Proposed to establish on limestone, crude, fluxing, foundry or furnace, in open-top cars, carload minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply from White Pigment Corporation Siding, Pa.,

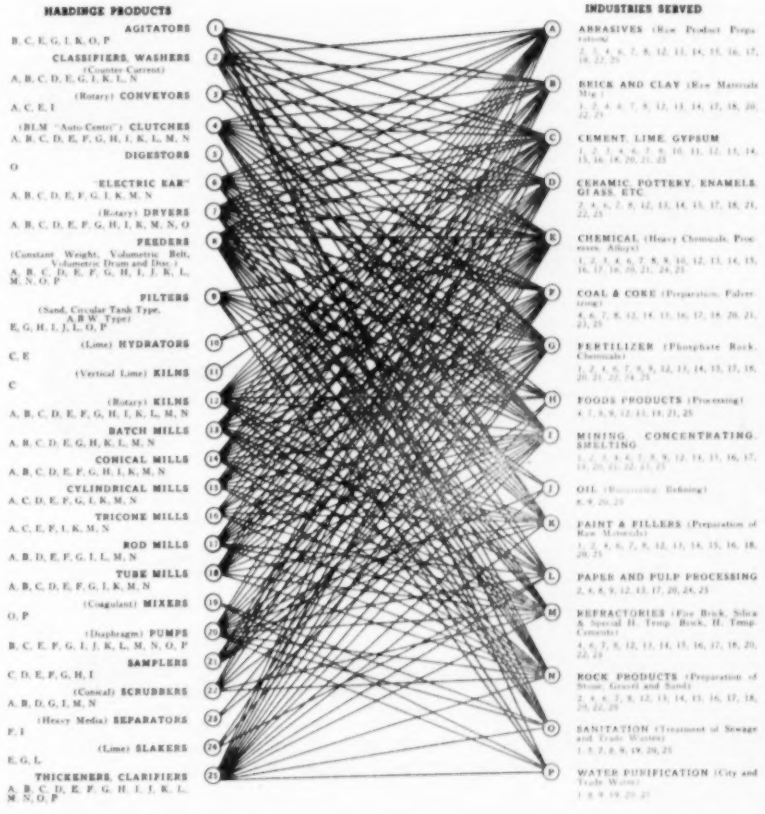

# Hardinge Products and Industries Served

**HARDINGE PRODUCTS**

The letters below the item of equipment indicate the industries served by it as tabulated in the opposite column. The lines are drawn from each piece of equipment to the industries it serves.

**INDUSTRIES SERVED**

The numbers below each industry correspond to the numbers of each piece of equipment which serves that industry. The lines are drawn from the industries to the different items of equipment serving that industry.


HARDINGE PRODUCTS
AGITATORS
B, C, E, G, I, K, O, P
CLASSIFIERS, WASHERS (Counter-Current)
A, B, C, D, E, G, I, K, L, N
(Rotary) CONVEYORS
A, C, E, I
(BLM "Auto-Center") CLUTCHES
A, B, C, D, E, F, G, H, I, K, L, M, N
DIGESTORS
O
"ELECTRIC EAR"
A, B, C, D, E, F, G, I, K, M, N
(Rotary) DRYERS
A, B, C, D, E, F, G, H, I, K, M, N, O
FEEDERS (Constant Weight, Volumetric Belt, Volumetric Drum and Disc)
A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P
FILTERS (Sand, Circular Tank Type, A.B.W. Type)
E, G, H, I, J, L, O, P
(Lime) HYDRATORS
C, E
(Vertical Lime) KILNS
C
(Rotary) KILNS
A, B, C, D, E, F, G, H, I, K, L, M, N
BATCH MILLS
A, B, C, D, E, G, H, K, L, M, N
CONICAL MILLS
A, B, C, D, E, F, G, H, I, K, M, N
CYLINDRICAL MILLS
A, C, D, E, F, G, I, K, M, N
TRICONE MILLS
A, C, E, F, I, K, M, N
ROD MILLS
A, B, D, E, F, G, I, L, M, N
TUBE MILLS
A, B, C, D, E, F, G, I, K, M, N
(Coagulant) MIXERS
O, P
(Diaphragm) PUMPS
B, C, E, F, G, I, J, K, L, M, N, O, P
SAMPLERS
C, D, E, F, G, H, I
(Conical) SCRUBBERS
A, B, D, G, I, M, N
(Heavy Media) SEPARATORS
F, I
(Lime) SLAKERS
E, G, L
THICKENERS, CLARIFIERS
A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P
INDUSTRIES SERVED
ABRASIVES (Raw Product Preparation)
1, 2, 3, 4, 6, 7, 8, 12, 13, 14, 15, 16, 17, 18, 20, 22, 25
BRICK AND CLAY (Raw Materials Mfg.)
1, 2, 3, 4, 6, 7, 8, 12, 13, 14, 15, 18, 20, 22, 25
CEMENT, LIME, GYPSUM
1, 2, 3, 4, 6, 7, 8, 10, 11, 12, 13, 14, 15, 16, 18, 20, 21, 25
CERAMIC, POTTERY, ENAMELS, GLASS, ETC.
2, 4, 6, 7, 8, 12, 13, 14, 15, 17, 18, 21, 22, 25
CHEMICAL (Heavy Chemicals, Processes, Alloys)
1, 2, 3, 4, 6, 7, 8, 9, 10, 12, 13, 14, 15, 16, 17, 18, 20, 21, 24, 25
COAL & COKE (Preparation, Pulverizing)
4, 6, 7, 8, 12, 14, 15, 16, 17, 18, 20, 21, 23, 25
FERTILIZER (Phosphate Rock, Chemicals)
1, 2, 3, 4, 6, 7, 8, 9, 12, 13, 14, 15, 17, 18, 20, 21, 22, 24, 25
FOODS PRODUCTS (Processing)
4, 7, 8, 9, 12, 13, 18, 21, 25
MINING, CONCENTRATING, SMELTING
1, 2, 3, 4, 6, 7, 8, 9, 12, 14, 15, 16, 17, 18, 20, 21, 22, 25
OIL (Processing, Refining)
8, 9, 20, 25
PAINT & FILLERS (Preparation of Raw Materials)
1, 2, 4, 6, 7, 8, 12, 13, 14, 15, 16, 18, 20, 25
PAPER AND PULP PROCESSING
2, 4, 8, 9, 12, 13, 17, 20, 24, 25
REFRACTORIES (Fire Brick, Silica & Special H. Temp. Brick, H. Temp. Cements)
4, 6, 7, 8, 12, 13, 14, 15, 16, 17, 18, 20, 22, 25
ROCK PRODUCTS (Preparation of Stone, Gravel and Sand)
2, 4, 6, 7, 8, 12, 13, 14, 15, 16, 17, 18, 20, 22, 25
SANITATION (Treatment of Sewage and Trade Wastes)
1, 5, 7, 8, 9, 19, 20, 25
WATER PURIFICATION (City and Trade Water)
1, 8, 9, 19, 20, 27

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1. First successful truck mounted lime spreader to handle stockpile lime satisfactorily.
2. First successful lime spreader with a chain conveyor.
3. First lime spreader built with Twin Distributor Discs.
4. First lime spreader with successful center dump.
5. First lime spreader with back endgate swinging wide open.
6. First lime spreader with running boards or catwalks as standard equipment.
7. First lime spreader with a 24" wide conveyor trough.
8. First spreader with an all-steel frame and wooden hopper.
9. First lime spreader with a successful attachment for spreading bulk or sacked fertilizer.
10. NOW — the first commercial fertilizer spreader with distributor discs driven at constant speed by separate motor. Conveyor chain synchronized with speed of rear truck wheels, assuring full width of spread at all times and uniform distribution.

**Provides Most Even, Positive Spread on the Market Today!**

**Combination Limestone and Fertilizer Spreader**

Gives you year 'round operation hauling and unloading road stone, gravel, etc.

With Optional Center Dump

**ALSO** Available With Streamlined Hood For Spreading Commercial Fertilizer.

**Send full information on:**

☐ Spreader ☐ Bulk Transport
☐ Bulkmaster ☐ Complete Line

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**HIGHWAY EQUIPMENT CO. Inc.**

**622 D AVENUE, N.W.**
**CEDAR RAPIDS, IOWA**

BULK FEED and GRAIN BOOMS
LIME and FERTILIZER SPREADER
SELF UNLOADING TRANSPORT
MATERIAL SPREADERS TRACTION-TAILGATE-TRUCK MOUNTED

***Manufacturers of the World's Most Complete Line of Spreaders and Bulk Material Delivery Equipment***

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*Clip-as-Rip*

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**BELT LACING** for: all conveyor belting ¼" to ⅞" thick.

THE DUAL PURPOSE LACING for PATCHING & SPLICING

No Special Tools Required: JUST A HAMMER

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**THREE POINT BELT LACING CO.**

**Peace Dale, R. I.**

***Formerly Mfg. By The Bristol Co.***


to Pittsburgh, Bessemer, Duquesne, Homestead, and Braddock, Pa., $1.90 gross ton; Erie, Pa., $3.08 gross ton; Steubenville, Ohio, $2.07 gross ton. Subject to ExParte 175-B increase.

### ILLINOIS FREIGHT ASSOCIATION

**Docket IRC 511-1293-A**—Proposal is being made to establish a rate of 77 cents per net ton on agricultural limestone, carload, from Thornton, Ill., to Pence, Ind., minimum weight 90 percent of marked capacity of car, except that when car is loaded to full cubical or visible capacity, actual weight will apply. Subject to X-175-B increase. Present rate is $1.09 per net ton.

### NORTH PACIFIC COAST FREIGHT BUREAU

**Docket X NC 2982** (Supplement 1) (S)—Request rate of 2 cents per hundredweight over Yakima, Wash., on gypsum rock, carload, Hanover and Heath, Mont., to Orchard (Yakima County), Wash. Minimum 40 tons.

**Docket NC 3371** (Supplement 1)—Proposed to establish on gypsum rock, crushed, ground or powdered, carload, minimum weight 50 tons in closed cars, from Ellisford, Wash., to the following points:

Ellensburg, Naches, Tieton,
White Swan, Yakima .....25 cents
Pasco, Kennewick .....22 cents
Sunnyside, Walla Walla .....23 cents

Rates not subject to X-175.

**Docket X NC 3521 (S)**—Request to establish on limestone, crude or crushed, carload, Durkee, Oreg., to Salem, Oreg., 24 cents per hundredweight. Minimum 50 tons. Rate subject to X-175 increase.

**Docket X NC 3532 (S)**—Request rate of 286 cents per ton in five car lots on limestone, carload, Durkee, Oreg., to Portland, Oreg., same as from Enterprise.

### NORTH PACIFIC COAST FREIGHT BUREAU AND PACIFIC SOUTHCOAST FREIGHT BUREAU

**Docket JT-2302 (S)**—Request rate on rock, perlite, crude, carload, (minimum 50 tons) to Portland, Oreg., from Superior, Ariz., $10.00 per net ton; from Socorro, N. M., $11.40 per net ton.

**Docket JT-2687 (S)**—Request rates on gypsum, crude, crushed, ground or powdered, carload, Sigurd, Utah, (minimum 40 tons) to Grotto, Wash., 28 cents per hundredweight in open-top cars; 30 cents per hundredweight in closed cars.

**Docket X JT-2708 (S)**—Request rate on limestone, crushed, in bags, carload, from Luning, Nev., to Portland, Oreg., 32 cents; to Seattle, Wash., 40 cents, minimum 80,000 lb. for 40-ft. cars and 100,000 lb. 50-ft. cars.

### PACIFIC SOUTHCOAST FREIGHT BUREAU

**Docket X 3998 (S)**—Request rate of $1.40 per net ton on sand, lime, in bulk, in open-top cars, Dolomite and Ellerbeck, Utah, to Geneva, Utah, minimum 50 tons.

**Docket 4026 (S)**—Request reduction in minimum weight from 20 tons to 15 tons on perlite, expanded, carload, Los Angeles to San Diego, Calif.

**Docket 4028 (S)**—Request rate of $2.75 per net ton on perlite, crude, carload, Truckee, Calif., to Sacramento, Calif. Minimum 50 tons.

**Docket 4052 (S)**—Request rate of 33 cents (minimum 40 tons) for cars 40-ft., 7-in. and under and 50 tons for cars over 40-ft., 7-in. on limestone, crushed, in bags, carload, Luning, Nev., to Salt Lake City, Utah.

**Docket X 4078 (S)**—Request rate of 10¾ cents per hundredweight on rock, lime, carload, Paul Spur, Ariz., to Peterson, Ariz.

## WEEKLY DOCKET AND STATUS REPORT OF PRIOR SOUTHERN FREIGHT ASSOCIATION PROPOSALS

**Docket A 15706**—Crushed stone and related articles described in item 401 E Southern Freight Tariff Bureau tariff 388-G from Blue Ridge, Va., 100 cents net ton and from Buchanan, Va., 110 cents net ton to Fieldale and Martinsville, Va. Not subject to X-162-6-8 increases.

**Docket A 2525**—Amend tariff X-175-B to provide for 12 percent in lieu of 15 percent increase on gypsum or gypsum rock, whole or broken, crushed or ground, carload, in open cars, from, to, and between Southern territory.

**Docket A 15797 (a)**—Proposed to establish rate of 210 cents on granite, limestone or marble, ground or pulverized, in closed cars, carload, as described in item 445 of Southern Freight Tariff Bureau 388-H from Mascot, Tenn., to Nashville, Tenn. Not subject to X-162-6-8.

**Docket A 16111 (c)**—Proposed to establish on stone, crushed, in closed cars, carload, 40 tons from Rockton, S. C., to the following points: Mt. Vernon, Ind., 446 cents net ton; Shawneetown, Ill., 512 cents net ton; Ashley, Eldorado Jct., Mt. Vernon, Woodlawn, Ill., 488 cents net ton; Carmi, Ill., 470 cents net ton; Enfield, Ill., 476 cents net ton; Nashville, Ill., 500 cents net ton. Rates not subject to X-162-6-8 increases.

## SOUTHWESTERN FREIGHT BUREAU

**Docket 65646 (S)**—Proposed to establish rate of $4.04 per net ton in open cars and $4.53 per net ton in closed cars on limestone, Limedale Spur and Myersville Spur, Ark., to Rockford, Ohio. Not subject to X-162-6-8 increases.

**Docket 65647**—Proposed to establish on silica sand rate of $3.21 per net ton from Guion, Ark., to Seminole, Okla. Not subject to X-162-6-8 increases.

**Docket 65736 (S)**—Establish rate on gypsum or gypsum rock, Acme, Tex., to New Mexico, to representative destinations shown below in cents per net ton: Berino, 480 in open cars; 500 in closed cars; Vado and Rincon, 520 in open cars; 560 in closed cars. Rates not subject to X-162-6-8 increases.

**Docket 65882 (S)**—Proposed to establish rates of 680 cents in open-top equipment and 727 cents in closed equipment, per net ton on ground limestone, Bloomington, Ind., to Acme, Tex. Not subject to X-162-6-8 increases. Minimum weight 30 tons.

## TRANS-CONTINENTAL FREIGHT BUREAU

**Supplement 2 to C-212**—Amend tariff 1 by publishing rates on gypsum or gypsum rock, crushed and/or pulverized ground, not powdered, in bulk or in bags, carload from Rotan, Tex., to Los Angeles, Calif., 35 cents and to San Francisco, Calif., 50 cents. Minimum 40 tons. Rates not subject to X-162-6-8 increase.

**Docket C 9839** (Reopened)—Amend tariff 1 by publishing through single factor rates on limestone, ground or powdered, carload, from Brownson, Gantt's Quarry, Ala., 1,294 cents; from Dolcito, Ala., 1,283 cents; from Tate and Whitestone, Ga., 1,338 cents per ton to Pacific Coast. Minimum 50 tons. Not subject to X-162-6-8 increases.

**Supplement 1 to C 9839** (Reopened)—Amend tariff 1 by publishing single factor rate of 1,319 cents per ton on limestone, ground or powdered, carload, Sparta, Tenn., to Pacific Coast. Not subject to X-162-6-8). Minimum 50 tons.

**Supplement 2 to C 9839** (Reopened)—Amend tariff 1 by publishing through

Above, a 2½-cu. yd. Crescent scraper is used on a 1-cu. yd. boom dragline and the yardage rises to 270 cu. yd. per hour. The scraper is taking gravel from a roadside pit and delivering to a movable truck loader.

In this picture a Crescent scraper hangs from a trolley that rides on a slack cable extending from the tip of the boom to an anchorage across the river. Thus, it is able to excavate far beyond the reach of the boom and haul material onto the bank.

A Sauerman Crescent Scraper will repay its moderate-initial cost many times over when added to your boom machine as auxiliary equipment. Simple to rig up, it increases the machine's capacity when used on specific job operations mentioned below.

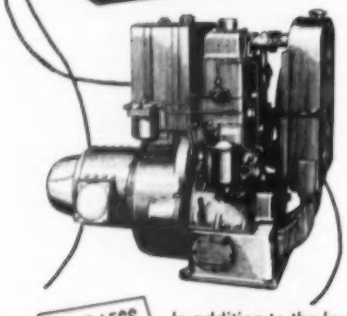
For backfilling, grading and other jobs where material must be moved but not lifted, the conventional casting method is used. The Crescent bites into and gathers the load with the ease of a plowshare, then hauls at ground level and deposits the load automatically when the forward pull is reversed. Machine strain and power consumption required to lift and swing the load to the discharge point are eliminated.

To dig material from a river, deep pit or soft area beyond the reach of the boom, another method is used to rig the Crescent Scraper to the boom machine. For such work the Crescent is suspended by chains from a simple trolley that rides on a track cable extending from the tip of the boom out to a movable anchorage. Digging, hauling and discharge proceed as in the casting operation. Following discharge, the empty scraper is lifted and gravity-returned to the excavation point merely by tightening the track cable.

Any boom machine will handle a Crescent of larger size than its regular dragline and clamshell bucket. The Crescent is much lighter, size for size, than these buckets. Digging power and strength are derived from the Crescent's bottomless construction and flowing lines—not from weight of metal. Users of boom machines can obtain full information by writing for illustrated literature describing how other operators use Sauerman Crescent Scrapers on their machines to increase output and reduce costs.

**SAUERMAN BROS., INC.**
534 S. CLINTON ST., CHICAGO 7, ILL.

You get more for your money with NORDBERG DIESELS



COST LESS TO OPERATE

In addition to the low initial cost of the 1, 2 and 3-cylinder Nordberg "4FS" series Diesel engines, the outstanding design and construction of these compact units assures extremely low fuel and lube oil consumption . . . which has been proved in a wide range of power jobs.

MORE 'EXTRAS'

Here are the "extras" that are all *included* in the low initial cost of Nordberg Diesel units: thermostatically controlled cooling system — heavy duty oil bath air cleaner — lube oil cooler — fuel and lube oil filters. *Compare* before you buy *any* 10 to 45 hp engine.

LONGER LIFE

Like all Nordberg Diesels, the "4FS" series engines are sturdily built to give years of reliable service with a minimum of maintenance time and expense.

Clip the coupon for details on Nordberg Diesel power units from 10 to 45 hp—Diesel generator units from 6 to 30 kw—or for Diesel pumping units in capacities from 200 to 3000 gpm at 15 to 240 ft. total head.

NORDBERG MFG. CO., Milwaukee, Wis.

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BUILDERS OF AMERICA'S LARGEST LINE OF HEAVY DUTY DIESELS

MAIL THIS COUPON TODAY

Nordberg Mfg. Co., Milwaukee, Wis.

Send catalog covering Nordberg Type 4FS Diesels. I am interested in a unit for the following service: PQ

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Your Name .....

Company Name .....

Address .....

City ..... Zone .... State ....

4-553


single factor rate of 1,261 cents per ton on limestone, ground or powdered, carload, minimum 50 tons, Rockwood, Ala., to Pacific Coast. Not subject to X-162-6-8 increase.

### FREIGHT TRAFFIC COMMITTEE TRUNK LINE TERRITORY RAILROADS

**Docket TLM-3099** (Shipper)—Issue rate of $1.45 per net ton to meet motor truck competition from Montoursville, Pa., to Millersburg, Pa., on sand (except sand, molding, bonded—naturally or otherwise—and except ground or pulverized) and gravel, in open-top equipment without tarpaulin or other protective covering, carload minimum weight 90 percent of marked capacity of car. Subject to ExParte 175-B increase.

**Docket TLM-3108** (Carrier) — Proposed to issue rate of 70 cents per net ton to meet motor truck competition on stone, natural (other than bituminous asphalt rock), crushed, in open-top cars, not protected by tarpaulin or other protective covering from Prospect Junction, N. Y., and Utica, N. Y. Not subject to ExParte 175-B increase.

### FREIGHT TRAFFIC COMMITTEE TRUNK LINE TERRITORY RAILROADS

**Docket TLM-3154** (Carrier) — Proposed to issue rate of $1.00 per net ton to meet motor truck competition on stone, natural (other than bituminous asphalt rock), crushed, in open-top cars, not protected by tarpaulin or other protective covering, carload minimum weight per note 2 of New York Central tariff ICC 1299, from South Bethlehem, N. Y., to Alsen, N. Y. Rate not subject to ExParte 175-B increase.

**Docket TLM-3166** (Shipper) — Proposed to establish $2.31 per net ton on crushed stone. (Will not include agricultural limestone or ground limestone, unburned, fluxing stone or firestone, or stone, coated with oil, tar or asphaltum.) Carload minimum weight 90 percent of marked capacity of car, from Rock Hill, Pa., to Milford, Del. Rate subject to ExParte 175-B increase.

### WESTERN TRUNK LINE COMMITTEE

**Docket X-E 41-1850 (S)**—Proposed to establish rate of 125 cents per net ton from Huntington, Mo., and 110 cents per net ton from Ely, Mo., to Table Grove, Ill., on stone, crushed, in open-top equipment, minimum weight 90 percent of marked capacity of car, except that when car is loaded to capacity, actual weight, but not less than 20 tons, will apply. Rates not subject to ExParte 175-B increase.

**Docket X-E-41-1867 (S)**—Propose to establish rate of $2.27 per net ton on sand and gravel, carload minimum weight 90 percent of marked capacity of car, except that when loaded to full visible capacity, actual weight will apply, but not less than 20 tons, from Hawarden, Iowa, to Pierre, S. D. Rate not subject to X-175-B.

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U. S. Patents 1,876,738 - 1,947,167 - 2,021,945
11%-13½% Manganese-Nickel Steel
WEDGE BARS
More than double the life of . . .
SHOVEL and DIPPER TEETH
Nothing replaces the Nickel in Manganese-Nickel Steel to make it the toughest metal known—not harmed by heat.
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Send for your copy of Manganal Marketer #9. Tells how to save time and money on tooth repairs. Also FREE MANGANAL WALL CHART shows 23 actual size WEDGE BARS for easy reference.
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NEAREST DISTRIBUTOR UPON REQUEST

**Docket E-41-1877 (S)**—Proposed to establish rate of 495 cents per net ton in open-top equipment and 544 cents per net ton in closed equipment on crushed stone, carload minimum weight 90 percent of capacity of car, except that when loaded to full visible capacity, actual weight will govern, but not less than 20 tons, from Baraboo, Wis., to Fire Brick, Ohio. Above rates subject to X-175-B increase.

**Docket X-E-41-1889 (S)**—Proposed to establish rate of 308 cents per net ton on sand and gravel in open-top cars not protected by tarpaulin or other protective covering, minimum weight 90 percent of marked capacity of car, but not less than 25 tons, from Napoleon, N. D., to Pierre, S. D. Subject to X-175 increase.

## Magnesium Compounds Output Generally Lower in 1952

Crude magnesite production in the United States decreased 24 percent in 1952 from the 1951 figure, according to reports by producers to the U. S. Bureau of Mines, mainly as a consequence of a strike which closed most domestic iron and steel plants for two months or longer. Only 510,750 short tons were mined. Caustic-calcined magnesia and refractory magnesia sold or used by producers decreased 24 and 10 percent, respectively. Dead-burned dolomite sold by producers in 1952 was only 2 percent below the quantity sold in 1951 (1,966,460 short tons) because the increased demand by plants producing primary magnesium approximately balanced the decreased consumption in basic open-hearth iron and steel plants.

Production and sales of U.S.P. and technical specified magnesias, precipitated magnesium carbonate, and magnesium sulphate decreased in 1952 from 1951; production and sales of magnesium hydroxide, nitrate, and chloride increased. The magnesium chloride production increase in 1952 was more than 100 percent, owing to continued demand for magnesium metal by defense industries and for national stockpile purchases.

Estimated world production of magnesite in 1952 was the same as in 1951.

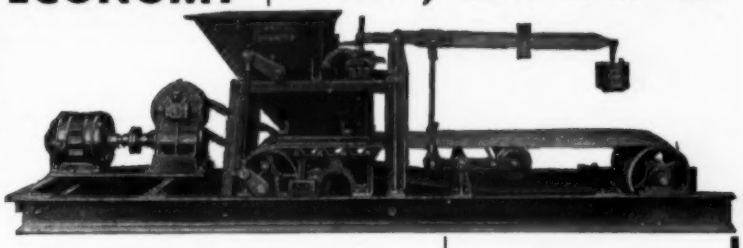
## Promotion Yields Results In Booming Materials Sales

Sales of gypsum plaster, sand, and lightweight aggregates in Omaha, Nebr., are booming as the result of the current campaign of the Promotion Committee of the Nebraska Lath and Plaster Bureau to sell plaster to the general public.

The aggressive, carefully planned promotion has been going strong since March, stressing the fire-resistive properties of plaster, eye appeal, and other advantages to the consumer. Media include job signs for newly-plastered buildings, newspaper advertising, two spots a week on TV, and direct mail to architects, small home builders, and contractors. The Lath and Plaster Bureau was also a prominent exhibitor at the six-day Midwest Home Show in May, with a cutaway room showing various types of plaster finishes on the walls and accoustical plastic on the ceiling.


For SPEED PRECISION DURABILITY ECONOMY

SCHAFFER POIDOMETERS lead the field in *Scaling Bulk Materials*



SCHAFFER Poidometers are widely recognized as "pacemakers" for accelerating production of raw and finished materials.

Poidometers provide valuable weight information at any required point, whether the operation involves weighing, blending, feeding, mixing, recording, or proportioning.

These highly accurate machines are engineered and constructed to insure continuous, high-economy service under all working conditions.

Available with total weight recorders, and with remote controls for showing and changing feed rate.

OVER 1300 now serving Industry

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Complete Information in CATALOG No. 5

SCHAFFER POIDOMETER CO.

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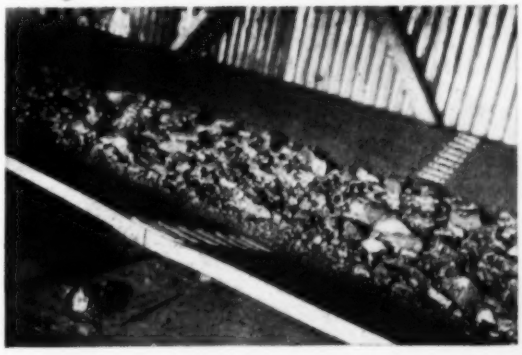
BELT FASTENERS and RIP PLATES



FOR HEAVY CONVEYOR AND ELEVATOR BELTS OF ANY WIDTH

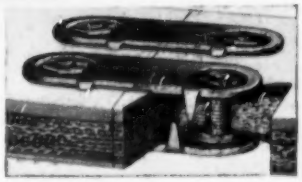
★ FLEXCO Fasteners make tight butt joints of great strength and durability.

★ Trough naturally, operate smoothly through take-up pulleys.

★ Distribute pull or tension uniformly.

★ Made of Steel, Monel, Stainless, Everdur. Also Promal top plates.

★ FLEXCO Rip Plates are for bridging soft spots and FLEXCO Fasteners for patching or joining clean straight rips.



Compression Grip distributes strain over whole plate area

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IT COSTS NO MORE

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REPLACE WITH
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MANGANESE STEEL
Shovel Dippers
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The Frog, Switch & Mfg. Co. CARLISLE, PA.
ESTABLISHED 1881

# trade notes

Walter C. Thompson, formerly vice-president in charge of sales, has been elected executive vice-president of the Torrington Company, Torrington, Conn., succeeding Alfred W. Burg, who has retired.

Ray B. Nichols, formerly president and general manager of the Torrington Company, South Bend., Ind., a subsidiary, has been made vice-president in charge of sales succeeding Mr. Thompson.

Other promotions at the South Bend plant include Rodney T. Dunlap, vice-president and general manager, John A. Toth, assistant general manager, and Walter Fisher, chief engineer.

Charles Grondona, vice-president of Hudson Pulp & Paper Corporation, New York, N. Y., announces his resignation from the corporation. Recently Mr. Grondona has been supervising the design and construction of the American Israeli Paper Mill in conjunction with The Merritt-Chapman, Scott Corporation.

Harnischfeger Corporation, Milwaukee, Wis., announces the appointment of J. F. Catalane as sales manager of the P&H Small Excavator Division. He succeeds F. C. Edwards, recently appointed general manager of the P&H Diesel Division, located at Crystal Lake, Ill.

Mr. Catalane began his career with Harnischfeger Corp. in 1945 as a salesman in the New York district office. In 1950 he took over the upper New York territory and was in charge of the sales in the area for the entire line of P&H products.

J. F. Catalane

Robert P. Jones

At the same time, Robert P. Jones will assume the duties of assistant sales manager of the small excavator division. He has previously been with P&H in the sales development capacity for the Soil Stabilizer Division.

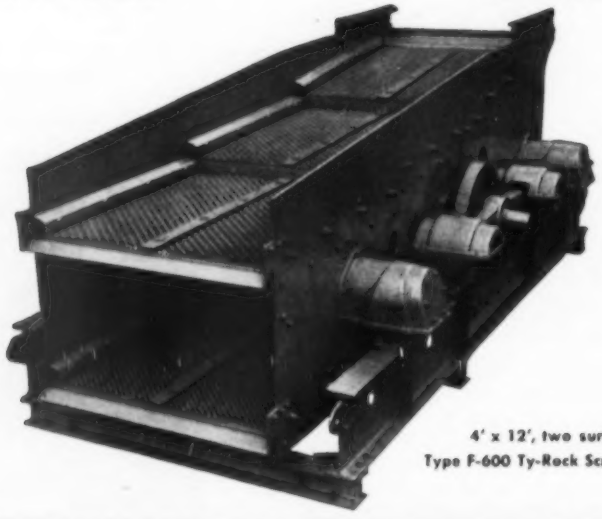
Gar Wood Industries, Wayne, Mich., announces the following organizational changes.

Melvin Staben has been appointed district manager of the northwest district for the Findlay Division. In his new position, Mr. Staben will cover Washington, Oregon, Montana, Idaho, and Wyoming.

Mark L. Shepard has been appointed manager of the Richmond Division with offices in Richmond, Calif. He succeeds J. B. Steed, who reports to Gar Wood's executive office, Wayne, Mich., for a new assignment.

E. W. Bullard, president of the E. D. Bullard Company, San Francisco, Calif., manufacturers of Industrial Safety Equipment, has been appointed to the Research Committee of President Eisenhower's Committe on Occupational Safety, a commission established to maintain a workable standard safety code in all industry. He is also deputy chief of Civil Defense in San Francisco, and a member of the Governor's Safety Council, and has been one of the nation's leaders in advocating safe practices in industry.

YOU CAN DEPEND ON
TY-ROCK SCREENS
BALANCED RUGGED



4' x 12', two surface
Type F-600 Ty-Rock Screen

THE W. S. TYLER COMPANY
CLEVELAND 14, OHIO
Manufacturers of Woven Wire Screens and Screening Machinery

Milton B. Beach and Phillip Rinaldo

Milton B. Beach has been elected president and general manager, and John P. Ramsey becomes vice-president and sales manager of Flexible Steel Lacing Company, manufacturers of belt fasteners for joining conveyor and transmission belting. Phillip Rinaldo continues as treasurer. Mr. Hugh L. Coats also continues as secretary of the company.

Mr. Beach has been a member of the company for 35 years, during 22 of which he served as vice-president. He has worked in every department of the firm, and before becoming president he was in charge of product engineering, design, development, and research.

New York Belting and Packing Company, Passaic, N. J., has announced the following appointment and changes in their sales organization.

Named to regional sales manager posts were W. A. Lindfors and Carl G. Link. Mr. Link will handle the Great Lakes region, including Chicago, Pittsburgh, and Detroit. Mr. Lindfors will supervise sales in the rest of the country. Wilbur E. Combs was appointed merchandise manager, and Harry H. Raber sales operating manager.

William I. Butler, manager for the southeastern district, with offices in Memphis, Tenn., has been named district manager for the East Central states with offices in Cleveland, Ohio. His current post will be filled by William W. Conard. Malcolm B. Roach, formerly sales engineer, has been appointed assistant manager for the southwestern district with headquarters in Dallas, Tex.

Two transfers in the sales departments of Koehring Company, Milwaukee, Wis., and one of its subsidiaries, Parsons Company, Newton, Iowa, have been announced. R. E. Bansemer, assistant sales manager at Koehring, has been named sales manager for Parsons. M. O. Messenger, sales manager at the Iowa plant, has moved to Milwaukee to take over the assistant sales manager's duties in the parent company.

O. S. Dollison, vice-president of the Lee Rubber & Tire Corporation, Youngstown, Ohio, has announced his retirement.

J. A. MacIntire Jr. has been appointed assistant manager of wire braid hose sales for the Republic Rubber Division.


PYRASTEEL

SEGMENTAL KILN ENDS FOR CEMENT PLANTS
. . proven satisfactory in THOUSANDS of Installations

Avoid burnouts and shutdowns, and insure years of continuous service, by equipping your kilns, both feed and discharge ends, with PYRASTEEL Segmental Kiln Ends.

PYRASTEEL is equally effective and economical in many other high-heat applications, including clinker coolers, conveyor screws, feed pipes, and drag chains.

Over three-quarters of the annual cement output is produced in plants using either or both of our alloys, PYRASTEEL and EVANSTEEL.

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Unit Segments are easy to install or replace

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Kedzie Avenue and 37th Street • Chicago 32, Illinois
*Makers of Alloy Steel for Over 40 Years*



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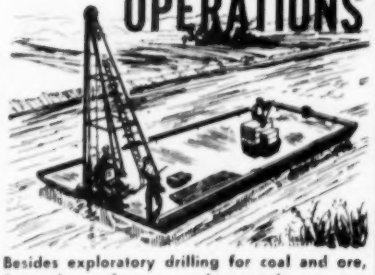
CONTRACT Diamond Core Drilling OPERATIONS

ANY KIND - ANY TIME ANYWHERE



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From shallow holes to depths of more than a mile — in regions so remote that men and equipment were delivered by float planes — from barges on lakes and rivers — in mountain terrain so wild that mule-back transportation was required — from the blazing tropics to the sub-zero arctic — our crews have overcome every difficulty and completed their assignments to the customer's satisfaction.

Today, we have a large force of experienced operators and supervisors and an ample supply of modern equipment for every drilling requirement, so that we can undertake almost any job — anywhere — on very short notice.

Besides exploratory drilling for coal and ore, from the surface or underground, our contract service includes blast-hole drilling, directional drilling, foundation test drilling, grout holes and pressure grouting. Estimates, and constructive suggestions whenever possible, submitted promptly on request.

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Manufacturers, also, of high-speed diamond drilling machines, diamond bits and complete accessory equipment. Write for catalog.

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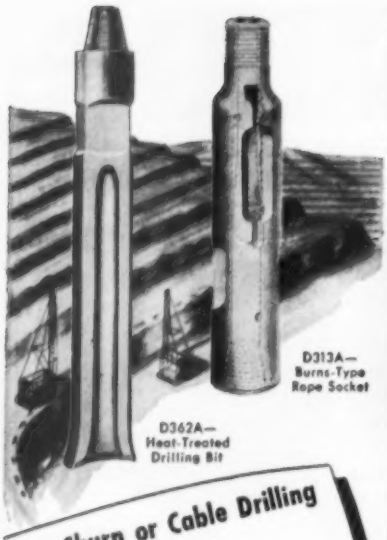



For Churn or Cable Drilling
of
• BLAST HOLES
• PROSPECT HOLES
• SAMPLING
SAFE • EFFICIENT • ECONOMICAL

Spang Churn or Cable Tools are top performers in their fields for drilling test holes when prospecting or sampling . . . drilling blast holes for fragmentation of minerals or overburden . . . drilling and reaming escape, dewatering and ventilating holes . . . and drilling wells for other purposes. Fifty years' experience serving oil, water-well, mining and quarrying operations assures their value.

D606—Reamer-Type
Pilot Bit

LARGE BITS
for pilot hole drilling and stage enlargement reaming of dewatering, ventilation and escape holes.

D370F—Prefabricated
Star Bit

SPANG CABLE TOOLS
Made by
SPANG & CO., BUTLER, PA.
for
• SHOT BLAST HOLES • WELL DRILLING
• PROSPECT DRILLING • SAMPLING


Koehring Company of Milwaukee, Wis., has announced the appointment of E. A. Smith as vice-president and manager of its two export sales subsidiaries, Koehring Inter-American Company and Koehring Overseas Company. He was formerly sales engineer for C. S. Johnson Company of Champaign, Ill., a Koehring subsidiary.

E. A. SMITH

WM. RODGERS

William Rodgers has been elected vice-president and general sales manager of Blaw-Knox Company, Pittsburgh, Pa. He joined the company in April, 1953, in the new staff post of general sales manager. For many years he was in the construction materials business, and in recent years he has been in the motor transport field.

Election of Richard M. Paget as a director of Atlas Powder Company, Wilmington, Del., has been announced. Mr. Paget is senior partner in the New York and Chicago management consultant firm of Cresap, McCormick and Paget.

John E. Caskey has been elected a vice-president of United States Rubber Company, New York, N. Y., and general manager of the company's Naugatuck Chemical Division. He succeeds vice-president John P. Coe, who will handle the company's interests in the transfer of synthetic rubber plants from government to private industry. George R. Vila, formerly sales manager of Naugatuck Chemical Division, will become assistant general manager of the division.

Mr. Caskey, together with Mr. Vila, will direct all sales, research, and production activities of Naugatuck Chemical Division.

At the same time United States Rubber announces the following major organization changes in the sales department of U. S. Tire Division. H. Newman Roberts, formerly district manager at Charlotte, N. C., has been named Southern Division manager with headquarters in Atlanta, Ga. Walter F. Brown is the new manager of the revised North Central Division with headquarters at Detroit, Mich. Harry R. Mack moves from Southern Division manager to Central Division manager with offices in Chicago, Ill. Edwin W. Means, Charlotte, N. C., and Robert R. Walker, Philadelphia, Pa., have been appointed new district managers. Mr. Walker succeeds E. J. Bassine, who resigned to enter business as a U. S. Royal distributor in Philadelphia, Pa.


FARREL-BACON
JAW CRUSHERS
SIZES 60"x48" to 10"x7"

Optional design features include: (1) Meehanite frame, sectionalized when necessary; (2) removable water-cooled bearings; (3) improved design of swing-jaw bearing; (4) force-feed oil lubrication, or circulating system if desired; (5) split flywheels; (6) flat or V-belt drive. *Write for further details or engineering assistance.*

FARREL-BACON
ANSONIA, CONNECTICUT
RA 4

SYNTRON
"Vibrating"
TEST SIEVE
SHAKERS

*Eliminate all Guesswork*

**Provide definite sizing of test samples**

- Use standard 8" Screen Scale Testing Sieves
- A reset timer for accurately timed test periods
- Controlled electromagnetic vibration—no motors, pulleys, etc.

**Write Today for FREE Catalog Folder**

SYNTRON CO.
385 Carson Ave. Homer City, Pa.

The Euclid Road Machinery Company, Cleveland, Ohio, announces the appointment of the Colorado Builders' Supply Company as its new distributor in Colorado, most of Wyoming and 11 western counties of Nebraska. Headquarters of the new distributor are at 1300 W. Evans Ave., Denver, Colo. The firm is headed by James D. Maitland.

Also announced is the appointment of Melbourne W. Miller as district manager for the Montana, North Dakota, South Dakota, and Alberta, Canada, area. J. C. Dix has been appointed district manager for Euclid operations in Georgia, Alabama, Florida, and the eastern part of Tennessee.

The Orton Crane and Shovel Company, Chicago, Ill., announces the appointment of Arthur E. Le Gare as sales engineer for the firm. He was formerly in the engineering department and then sales engineer for the General Steel Castings Corporation. Mr. Le Gare will represent Orton primarily in the industrial and railroad market.

The construction machinery division of Chain Belt Company, Milwaukee, Wis., announces the following personnel changes in its sales organization.

Robert G. Kuhnmuench has been appointed district manager with offices at 3838 Santa Fe Ave., Los Angeles, Calif. Richard Seaman will be the new assistant district manager with offices at the company's Construction Machinery Division, 19 Rector St., New York, N. Y.

E. J. Seifert, president of Pettibone Mulliken Corporation, Chicago, Ill., announces the election of L. E. Denman as assistant treasurer with headquarters at the Chicago home office and plant at 4700 W. Division St., Chicago, Ill. Mr. Denman formerly was comptroller and assistant secretary of Hibbard Spencer Bartlett & Company, Evanston, Ill.

The Cleaver-Brooks Company, Milwaukee, Wis., announces the appointment of Hathaway-McCartney Engineering and Supply Co., Denver, Colo., as exclusive sales agent for Cleaver-Brooks Self-Contained Boiler Equipment. The territory will include Colorado, southeastern Wyoming, western Nebraska and western Kansas.

The appointment of two new representatives for territories in the Southeast and Southwest have been announced by the Bergen Machine and Tool Company, Nutley, N. J.

Roy Darden, 921 Beaverbrook Drive, N. W., Atlanta, Ga., will handle Bergen products and replacement parts in Alabama, South Carolina, Georgia and Mississippi.

John S. Chase, Chase Building Products, Inc., 302 Interurban Bldg., Dallas, Tex., will represent the company in Arizona, New Mexico, Texas, Oklahoma, Arkansas, and Kansas. He is a past president of the N.C.M.A. and has been intimately connected with the concrete products industry for many years.

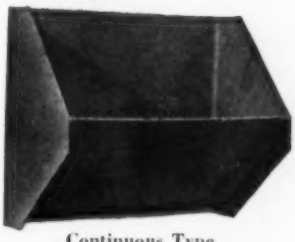
••• **KNOCK-OUT!**

***High Material Handling Costs***

**Specify Super-Service**

**STANDARD**

**STEEL ELEVATOR BUCKETS**



Continuous Type
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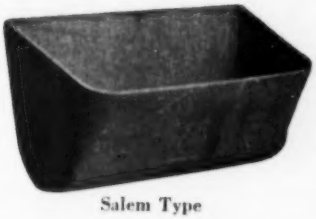


Salem Type

Write Today. You will approve our Price and our Service

STANDARD Steel Buckets "stand up like champions" in resisting abrasion and corrosion.

Rigidly built of top-grade steel. Reinforcing strip may be welded to bucket lip, and hard surface rod added, to insure extra service life.

High-economy STANDARD Buckets are available in all styles, types, sizes and gauges. We are equipped to furnish new units or recondition present equipment at minimum cost.

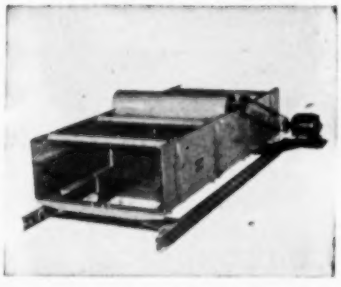
The Standard Metal Mfg. Co. SMM SINCE 1921

**STANDARD METAL MFG. CO.**

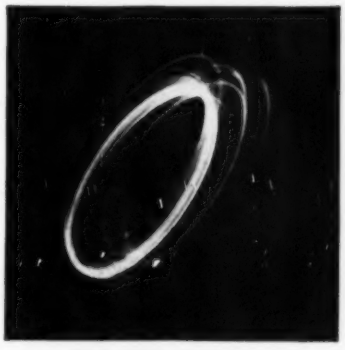
**111 CENTER ST., MALINTA, OHIO**

**HERE'S WHY A UNIVERSAL**

**SCREEN WILL GIVE *YOU* CLEANER AND FASTER SEPARATIONS THAN YOU THOUGHT POSSIBLE!**



**This fast elliptical stroke at 1800 rpm is working over every *inch* of the screen deck!**



**Whether your material is damp or dry, you'll get better results with a Universal. Dozens of new Universal users report increased tonnages with these dependable and economical Screens.**

***Write today for literature and new low prices!***

**UNIVERSAL VIBRATING SCREEN CO.**

RACINE — WISCONSIN

**. . . chosen by**
**MODERN QUARRY OPERATORS**

"Cape Ann"
**FORGED**
**STEEL DROP BALL**

**RUGGED DESIGN**
**GREATER IMPACT**
**ECONOMICAL**

The "Cape Ann" Drop Ball is a sure winner because it provides top serviceability at minimum cost.

Strong alloy steel pin. Forged connecting link, protected by deep recess, adaptable for swivel or shackle. Minimum cable replacements. Furnished complete as shown.

**2000 to 8000 lbs.**

***Write for full details***

**Cape Ann Anchor & Forge Co.**
**Gloucester • Massachusetts**


The Frank G. Hough Company, Libertyville, Ill., has appointed two new district representatives to work with Hough distributors.

Jack C. Bever will operate in the sales district comprising the District of Columbia, Maryland, Virginia, West Virginia, and the Carolinas. Dwain Richey will travel in Arkansas, Louisiana, Oklahoma, Texas, and New Mexico.

Sprague & Henwood Inc., Scranton, Pa., announces the opening of a western branch office in Grand Junction, Colo., under the management of Robert R. Carver.

Chase Bag Company, Chicago, Ill., announces the following changes in its sales organization.

James F. Pouchot has been appointed sales representative operating out of the Chicago sales office. J. B. Trigg has been promoted to the post of sales manager of the company branch at Buffalo, N. Y. At the same time the appointment of J. F. Porter as manager of the Toledo branch was announced.

Leroy J. Wieschaus, former abrasive engineer for American Wheelabrator & Equipment Corporation, Mishawaka, Ind., has been appointed to the post of district manager of the company's Birmingham, Ala., sales office.

The Oliver Corporation announces through its Farquahar Division in York, Pa., the completion of a manufacturing and merchandising agreement with the Stephens-Adamson Mfg. Co. of Canada Ltd. Under the terms of the agreement, Stephens-Adamson will manufacture a line of conveyors according to Farquhar specifications and will sell them in the Dominion of Canada under the trade name of Farquhar.

Gordon W. Rowand has been appointed assistant sales manager of Link-Belt Speeder Corporation, Cedar Rapids, Iowa, manufacturers of power cranes, shovels, and draglines.

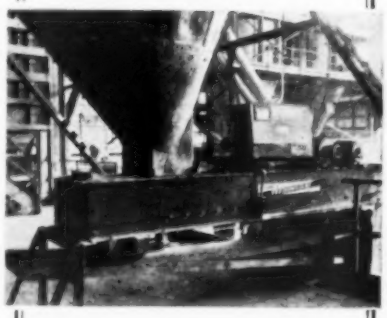
The appointment of R. A. Otterness as northwestern district manager has been announced by Schield Bantam Company, Waverly, Iowa. His territory will include Idaho, Oregon, Washington, Montana, British Columbia, Alberta, Saskatchewan, and two branches in Alaska.

N. Rulison Knox, former vice-chairman of Bucyrus-Erie Company of South Milwaukee, Wis., has been appointed assistant to the chairman of Poor & Company, Chicago, Ill.

Frank W. Fletcher, 811 Palmer Place, Nashville, Tenn., has been appointed representative of the Farrell-Cheek Steel Company, Sandusky, Ohio.

G. N. Dow has been appointed Chicago district sales manager, Leschen Wire Rope Division, H. K. Porter Company, Inc., St. Louis, Mo. Formerly he was district representative for Leschen in Detroit.

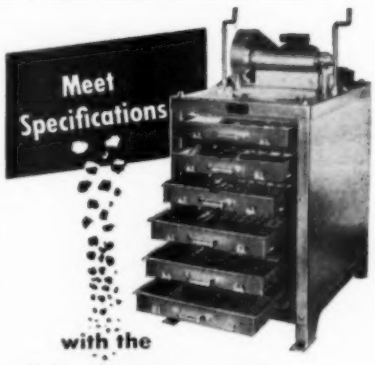

**You're Sure with Merrick**



FOR Positive Controlled Feed by Weight of Sand Gravel, Lime Clinker, Gypsum or other materials to Process—

*Use the Feedoweight*

**Merrick Scale Mfg. Co.**
**Passaic, New Jersey**




**Gilson Testing Screen**

The GILSON Screen cuts out error and guesswork in meeting sizing specifications for crushed stone, gravel, slag, coal, ores, and similar materials.

You can own and maintain a GILSON Screen for only 65-cents per 1,000-tons production in your plant, according to our sales and service records.

**WHY THE GILSON SCREEN?**

1. Makes test quickly and accurately
2. Two to seven separations simultaneously
3. Screen trays independently removable
4. Trays balanced to same tare weight
5. Visible separation to refusal
6. Few moving parts
7. Sturdy construction
8. Size range 4" to 200-mesh

**GILSON SCREEN CO.**
**BOX 186 • MERCER, PENNA.**

Caterpillar Tractor Co., Peoria, Ill., has announced the selection of Decatur, Ill., as the site of a new manufacturing plant to be managed by Warren Kinsey. A. W. Johnson will be manager of manufacturing; Ridley Orton, purchasing agent; H. O. Nelson, manager of employee relations; and C. A. Vobroucek, chief accountant.

American Brake Shoe Co., New York, has announced the appointment of Raymond A. Frick as vice-president of the brake shoe and castings division. He joined the company in 1942 and prior to this appointment was general works manager of the division.

Farrel-Birmingham Co., Inc., Ansonia, Conn., announces the appointment of Gerald R. Gonyer, as manager of the company's Chicago office. He succeeds Harry D. Temporal, who is retiring after 43 years of service with the company.

Gilman Paper Co., New York, N. Y., announces the appointment of Fletcher L. Munger as western sales manager in charge of the company's Chicago office, 400 West Madison St., Chicago, Ill. He succeeds E. A. Kendler whose retirement has just been announced.

Mr. Munger will be responsible to Harry C. Lawless, vice-president and director of sales for Gilman Paper Co. and its subsidiaries — Kraft Bag Corp., St. Marys Kraft Corp., and Cellucord Corp.

International Harvester, Chicago, Ill., has announced the establishment of an industrial power sales department. I. P. Payne has been appointed manager, assisted by W. M. Holland and C. E. Jones, who have been assistant managers of sales.

Headquarters of the new unit will be with the other industrial power divisional offices at Harvester's Melrose Park Works, Melrose Park, Ill.

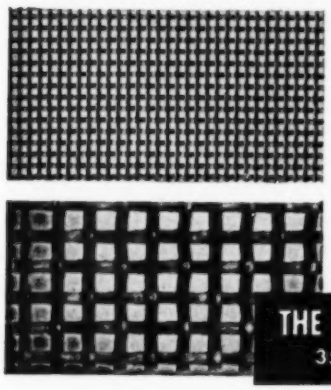
Howard H. Foster has been elected treasurer of Air Reduction Company, Inc., New York, N. Y., succeeding William Winters Jr., who has retired.

Atlas Powder Co., Wilmington, Dela., has announced the retirement of W. B. Blakey as director of operations of the explosives operating department. Max E. Colson succeeds Mr. Blakey as director of operations.

United States Rubber Co., New York, announces the appointment of James C. Westfall as assistant to E. G. Brown, vice-president and general manager of the mechanical goods division.

Highway Equipment Company, 840 S. 19th St., Harrisburg, Pa., was recently appointed distributor to handle crushing, screening, and conveying machinery manufactured by the Lippmann Engineering Works, Milwaukee, Wis. The territory will include the entire state of Pennsylvania.

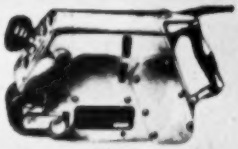
AROUND THE CLOCK
EVERYDAY—WITHOUT SHUTDOWNS
CLEVELAND WIRE SCREENS



Everyday—around the clock... less down time... increased tonnage... greater production can be yours when you install longer life "Cleveland" Wire Screens. Tough—yet ductile, produced by craftsmen, "Cleveland" wire screen sections maintain rigid accuracy of openings, have fewer wire breaks, prove greater resistance to abrasion, corrosion and fatigue. Mail us your requirements—our specialists will make recommendations at once.

Write for Bulletin No. 5 and 6.

THE CLEVELAND WIRE CLOTH & MFG. CO.
3574 E. 79 STREET · CLEVELAND 5, OHIO



"WE HEARTILY RECOMMEND LUBRIPLATE LUBRICANTS"

—says PORTER-CABLE MACHINE CO.,
Leading mfrs. of portable electric tools

"LUBRIPLATE reduces drag, permits easy starting, quiet operation and protects our machine parts against progressive wear. LUBRIPLATE is initially applied to our tools at the factory. For future lubrication by users, we secure LUBRIPLATE packed in tubes for distribution through our dealers."

For nearest LUBRIPLATE distributor, see Classified Telephone Directory. Send for free 56-page "LUBRIPLATE DATA BOOK"... a valuable treatise on lubrication. Write LUBRIPLATE DIVISION, Fiske Brothers Refining Co., Newark 5, N. J. or Toledo 5, Ohio.

REGARDLESS OF THE SIZE AND TYPE OF YOUR MACHINERY, LUBRIPLATE LUBRICANTS WILL IMPROVE ITS OPERATION AND REDUCE MAINTENANCE COSTS.

**AN ALLIS-CHALMERS REPORT**

# How hydraulic torque converter drive improves big tractor performance–increases job output

With a two-range transmission and hydraulic torque converter, the Allis-Chalmers HD-20 is the only crawler tractor that is capable of exerting maximum drawbar pull *at all times* . . . under all load and terrain conditions . . . without gear-shift guesswork.

Whatever the job, the operator need merely make contact with the load and then open the throttle. As the load requirements change, the hydraulic torque converter *automatically* matches the conditions with exactly the right combination of speed and pull.

This eliminates most shifting . . . leads to far more work done in a continuous work cycle . . . far longer equipment life.

**BULLDOZING** — Hydraulic torque converter lets Allis-Chalmers HD-20 take full advantage of available horsepower, roll bigger loads, tackle tougher dozing jobs. With full control at the throttle, operator can work safely and efficiently, regardless of terrain.

**PULLING** — Hydraulic torque converter drive actually multiplies torque up to four and one-half times... develops tremendous drawbar pull to start the load smoothly . . . and automatically accelerates to the highest speed that conditions permit, in either high or low range.

**PUSHING** — Operator just makes contact, then opens the throttle and relaxes. The HD-20 automatically matches speed to that of pushed equipment, maintains steady contact while loading, sends load off to the fill at higher speed.

**DIGGING AND LOADING** — With the HD-20G, the operator crowds surely and steadily, using only throttle and bucket levers. With full horsepower always available even at creeping speed, he can work effectively in mud, on hillsides or the edges of banks.

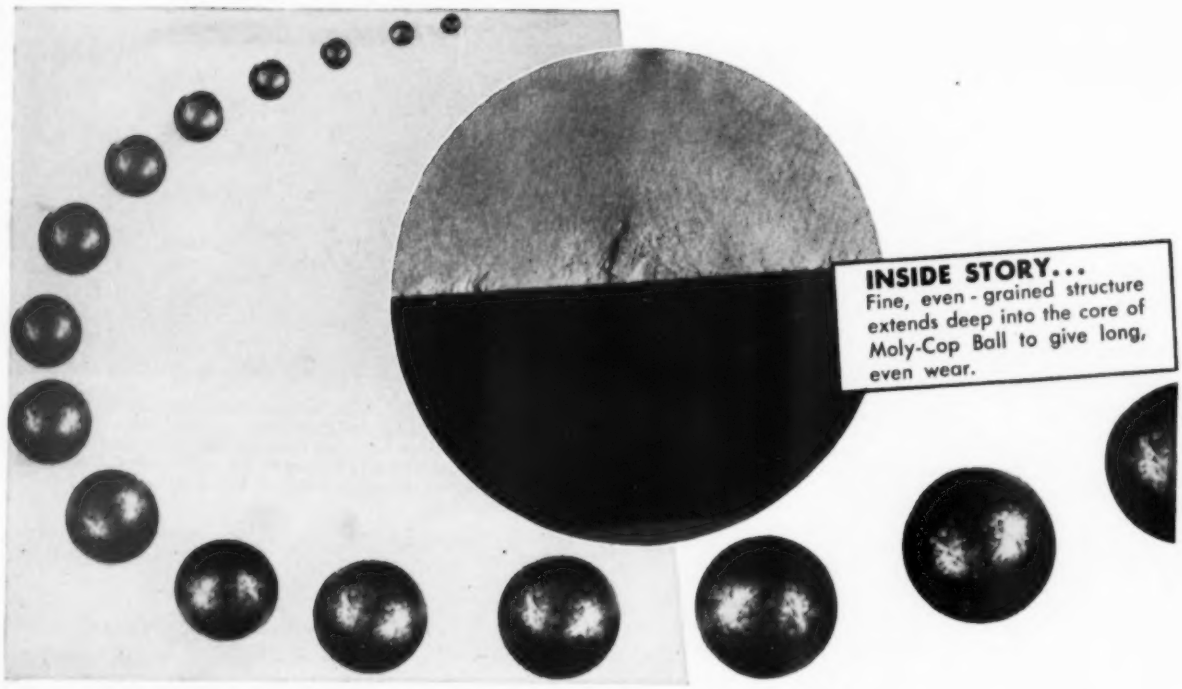
**OPERATOR COMFORT AND EFFICIENCY** — He chooses speed range when he starts, and he can finish most jobs without further clutching or shifting (except for reverse). Result — he works easily, yet efficiently all day long.

**LONGER LIFE FOR BIG EQUIPMENT** — Hydraulic cushioning reduces shock and vibration, with less strain, less wear on both the HD-20 and its auxiliary equipment, whether mounted or drawn. That means *less* downtime, *more* production time.

*Hydraulic torque converter drive, exclusive as standard equipment with Allis-Chalmers, is just one of many reasons why the HD-20 assures you higher output with less upkeep. Your nearby Allis-Chalmers dealer invites you to get the full story . . . and to see it in action.*

**ALLIS-CHALMERS**
TRACTOR DIVISION — MILWAUKEE 1, U. S. A.

Weight — 41,000 lb.
175 net hp. at flywheel




# If you want a finer grind . . . use a finer ball!

# SHEFFIELD MOLY-COP

TRADEMARK REG.

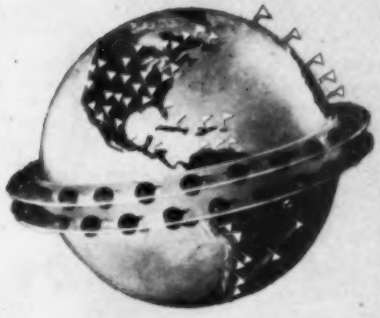
COPPER-MOLYBDENUM-ALLOY

## *Grinding Balls*

***For fine grinding*** you want a ball that will give you the highest possible production rate with the lowest cost per ton of material ground . . . fewer chargings, less "down time."

***Sheffield Moly-Cop Balls*** meet that requirement — because Sheffield's exclusive alloy and automatically controlled manufacturing methods produce a ball of finer, denser, more uniform structure. You get toughness and greatest resistance to abrasion. Moly-Cop Balls wear evenly, retain their spherical shape longer.

***Tests have proved*** that Moly-Cop Balls wear up to 35% longer than alloy cast steel balls; up to 50% longer than best quality unalloyed carbon forged steel; and up to 120% longer than cast white iron balls. Considering initial costs and length of service, the net savings that result from the use of Moly-Cop Balls are substantial.

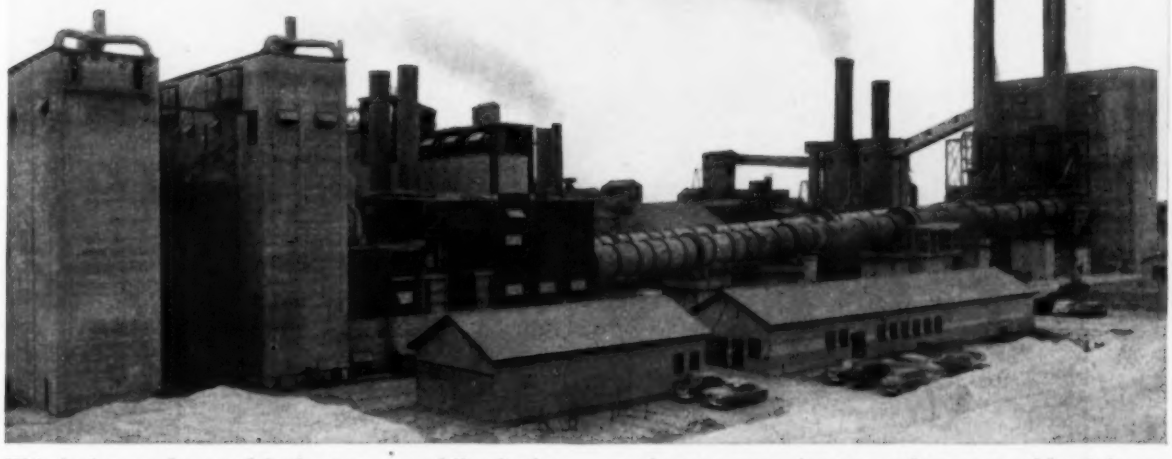


**Used and proved around the world**—*Sheffield engineers* are ready to prove the money-saving advantages of Moly-Cop Grinding Balls in your operation. Get in touch with us now.

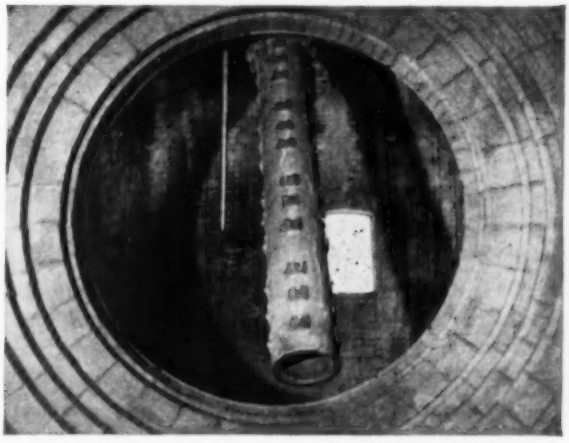
**SHEFFIELD**
**STEEL**
**CORPORATION**
HOUSTON KANSAS CITY
TULSA
SUBSIDIARY OF ARMCO STEEL CORPORATION

***Export Representatives:*** ARMCO INTERNATIONAL CORPORATION, MIDDLETOWN, OHIO

# THERMALLOY*at work... in the REFRACTORY INDUSTRY



This is the new home of the largest rotary kilns in the refractory industry . . . recently completed by Basic Refractories, Inc., in Maple Grove, Ohio. Measuring 11′3″ in diameter by 390′ long, each kiln daily processes approximately 2000 tons of granular dolomitic refractories for open-hearth and electric, steel-furnace linings. With continuous operation in this plant, equipment must give top performance, with minimum down time. Shown below are two important parts in Basic's production equipment . . . both made from high-heat and abrasion-resistant Thermalloy. Their design was achieved by co-operation between Electro-Alloys' and Basic's engineers. The same engineering help is available to you at Electro-Alloys.



**Thermalloy Kiln Feed Pipe . . .** The outside shell of the pipe must resist warping at temperatures up to 1700°F. in the dust collector chamber. The interior lining must resist the abrasive action of dolomite tumbling continually into the kiln. Both jobs are successfully done by selected grades of Thermalloy.

**Thermalloy Damper . . .** The sectional design of this high heat-resistant Thermalloy damper offers several cost-saving advantages in comparison to heavier refractory dampers formerly used: installation and handling are easier; damper sections can be replaced and repaired faster; draft control can be maintained more effectively.

***Put Heat-Resistant Thermalloy to Work in Your Plant . . .***
***call or write***

*Reg. U. S. Pat. Off.

AMERICAN Brake Shoe COMPANY

**ELECTRO-ALLOYS DIVISION**
ELYRIA, OHIO

# ERIE PORTABLE TRUCK MIXER PLANT BIG SUCCESS DOWN IN SAO PAULO, BOOMING CITY OF BRAZIL!

One man operates this Erie-Strayer Portable Concrete Mixing Plant. Set-up includes: 40 cu. yd. materials bin; 70-ton per hour bucket elevator for loading bin; 1-cu. yd. mixer and 1-cu. yd. bucket hoist for loading truck mixers with pre-mixed concrete. Sold by: Vias E. Viaturis, Sao Paulo, Brazil.

**ANTONIO MARQUES SOARES OF USINA CENTRAL De CONCRETO, S/A, SAO PAULO, SAYS: "THE ERIE-STRAYER PORTABLE IS EXTREMELY USEFUL AND VERY MUCH RECOMMENDED . . . PLAINLY SATISFIED"**

During tne past five years, Sao Paulo's industrial, commercial and geographical expansion has made it the modern metropolis of South America.

Usina Central De Concreto S/A has an important part in the city's development supplying ready-mixed concrete for city buildings and street construction in general. Since October 1952, they have been using Erie equipment. This is their statement about it: "The Erie-Strayer Portable Concrete Plant, due to its well-thought aggregate and water weighing system, is extremely useful.

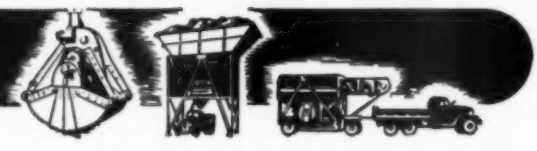
"It is very much recommended for the supply of concrete destined to huge operations which call for various types of rationally mixed concrete, and for consumption of a minimum of 100 cu. yd. per day.

"We are plainly satisfied with the performance of this fine machine."

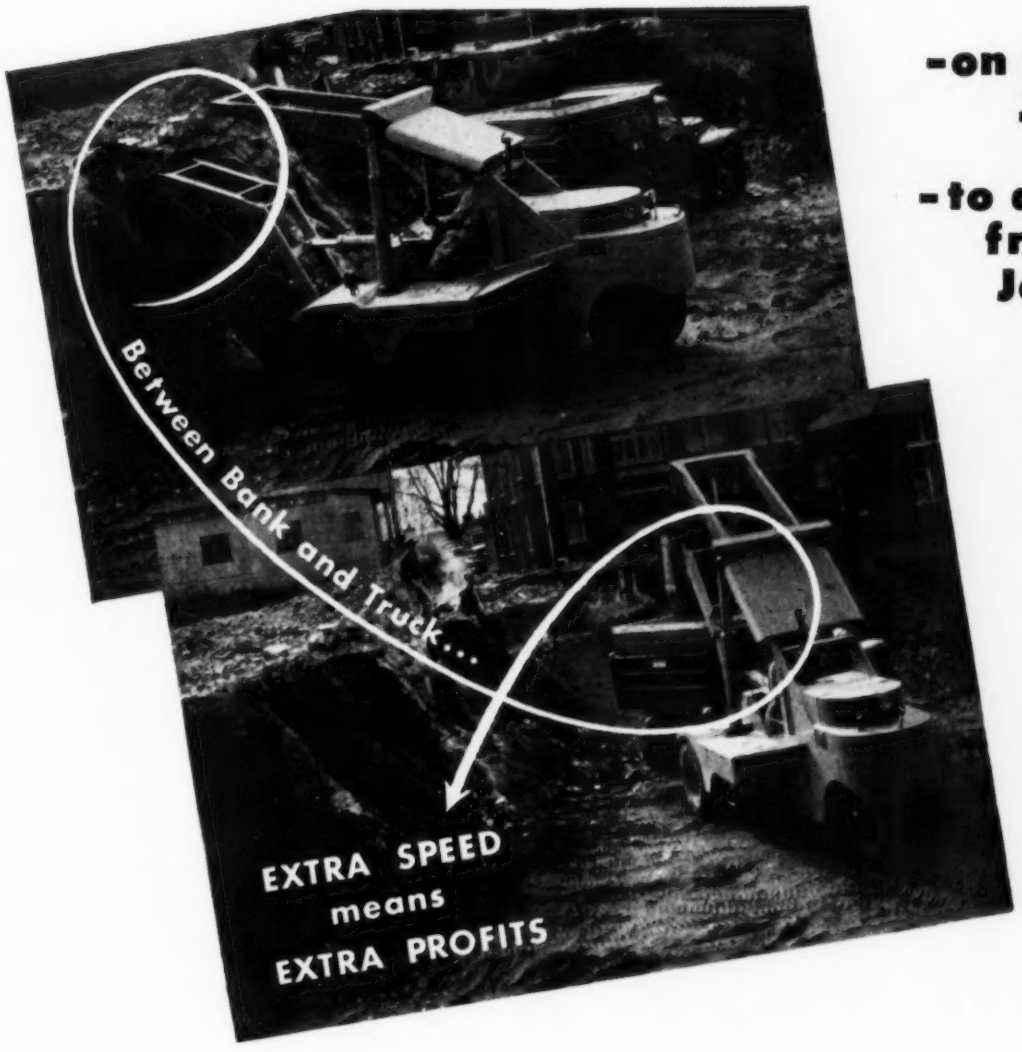
In Buffalo, Sao Paulo, Tokyo or Berlin, Erie equipment gets a similar stamp of approval. Why? Because Erie equipment is engineered and built to deliver the utmost in satisfaction . . . under all conditions . . . anywhere.

*For further information, write to* Dept. Q113

**ERIE**
**STEEL CONSTRUCTION COMPANY**
**3113 GEIST ROAD • ERIE, PENNSYLVANIA**



# This Dempster-Diggster Hydraulic Shovel gives you *TRUCK-SPEED MOBILITY*




**-on the Job**

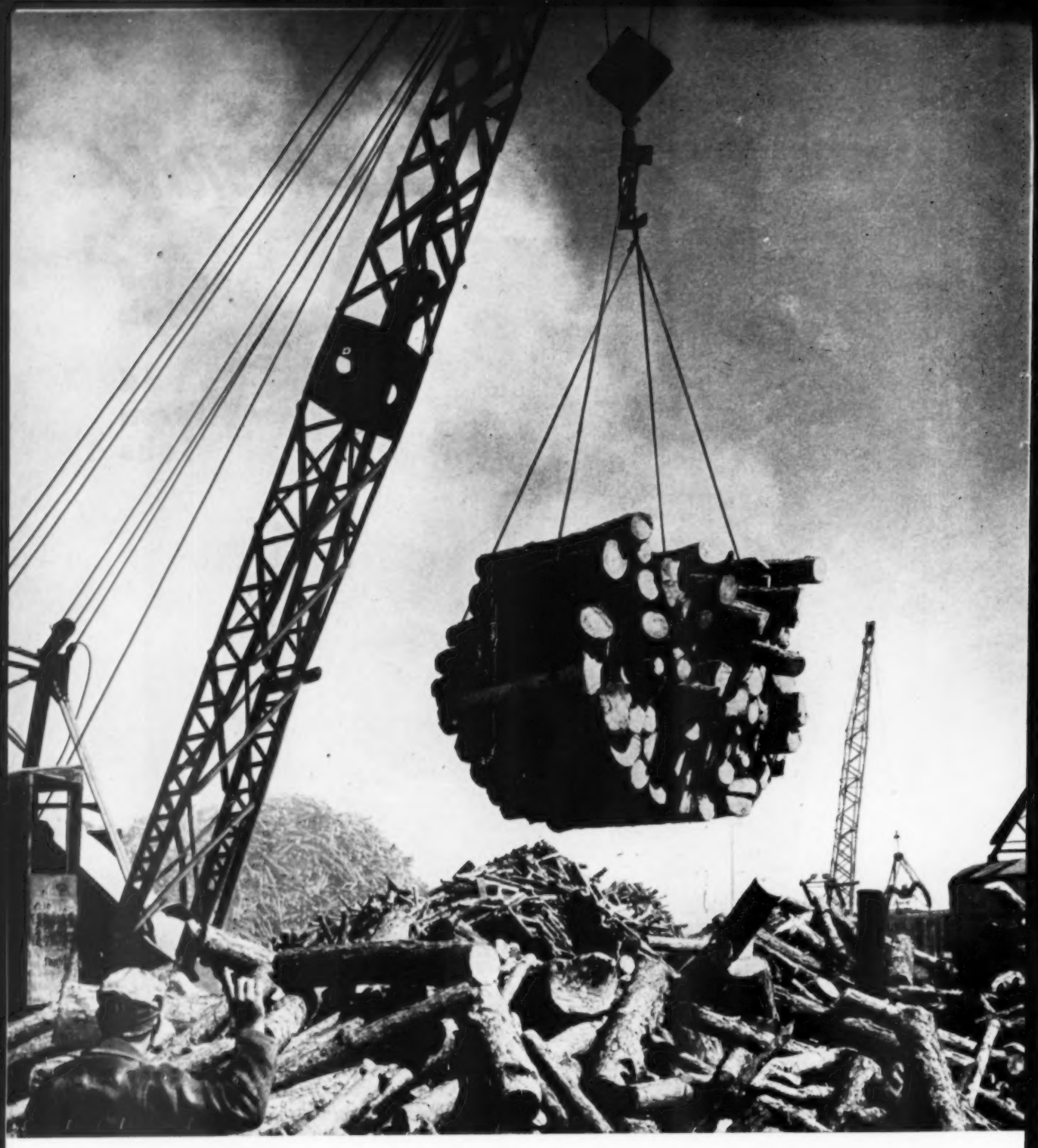
**-to and from Jobs**

These fast moving advantages are obvious and mean the Dempster-Diggster will make more money for you.

In the first place, no hauling equipment is needed . . . no loading and unloading time or man-hours are lost in getting the Dempster-Diggster to and from jobs. In the second place, with truck-speed mobility on the job, this power-packed 100% Hydraulic Shovel gets the job done faster! Here's a shovel that won't skim the bank or bottom—but gets a full bucket with every stroke. It's the only small shovel that offers you all the important features of big shovels . . . Simultaneous and Independent Crowd and Hoist . . . Hydraulic Crowding . . . Hydraulic Hoisting . . . Variable Crowd Action at any Dipper Position in addition to Changeable Buckets for digging or loading.

Write for complete facts on this revolutionary, power-packed hydraulic shovel. A product of Dempster Brothers, Inc.

**DEMPSTER BROTHERS, 2113 N. KNOX, KNOXVILLE 17, TENNESSEE**



**Wire Rope at Work** — This is the woodyard at Kraft Center, Cantonment, Fla., one of the largest enterprises of the St. Regis Paper Company. Here they build and move mountains — enormous mountains of logs. The stockpiles normally carry an inventory of 30,000 cords, and 1200 to 1400 cords are fed daily to the chippers at the paper mill.

The cranes you see in the yard are moving vast quantities of pulpwood, building up reserves so that the mill, with its healthy appetite for logs, will never go hungry. This is a job, too, for Bethlehem Wire Rope, which is rigged on the hard-working cranes. It is a punishing chore by any standard, the kind entrusted to Bethlehem rope in virtually every type of industry, wherever there's lifting or hauling to be done.

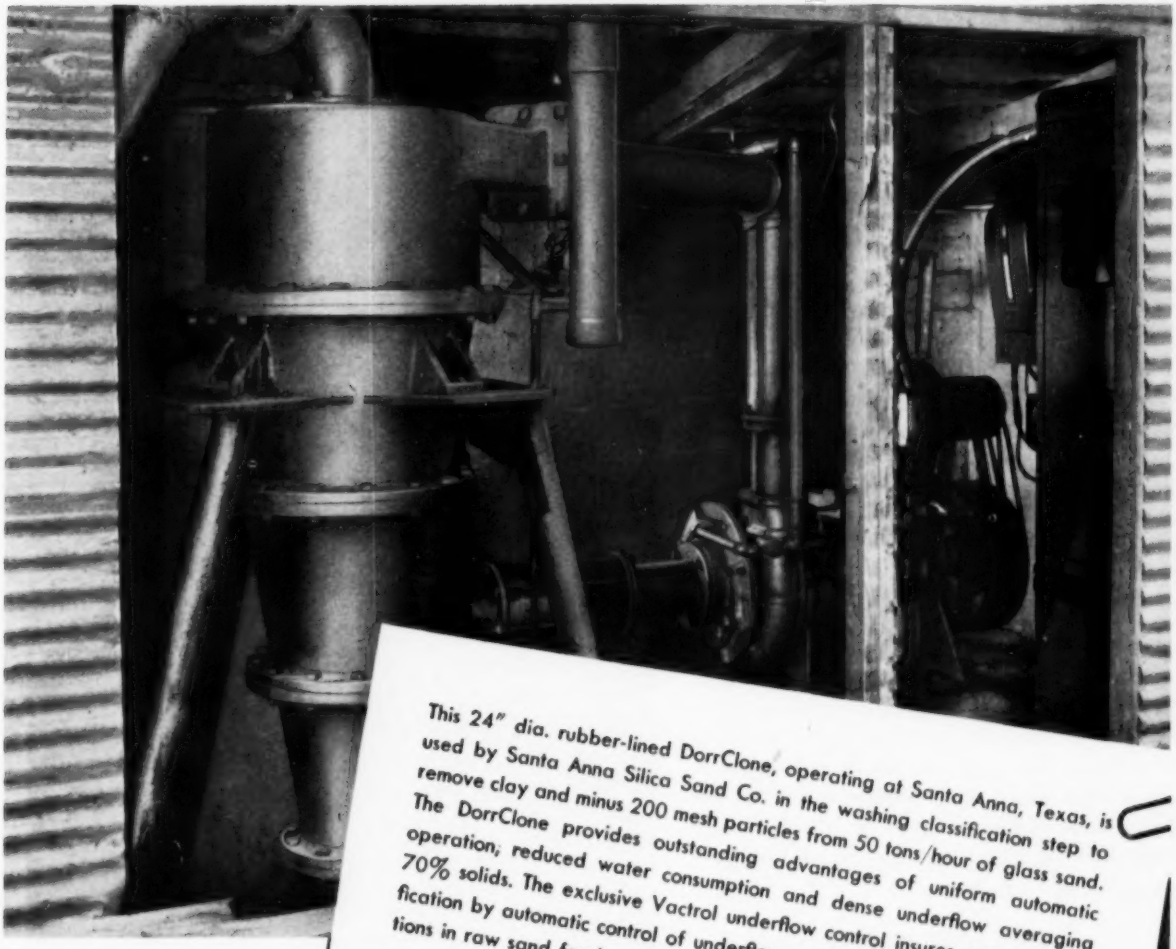
Bethlehem Steel Company, Bethlehem, Pa. On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

*Mill depots and distributors from coast to coast stock Bethlehem rope for the following industries and numerous others:*

MINING • CONSTRUCTION • PETROLEUM • EXCAVATING • QUARRYING • LOGGING • MANUFACTURING

# 50 tons-per-hour

## Silica Sand Washed by this DorrClone



This 24" dia. rubber-lined DorrClone, operating at Santa Anna, Texas, is used by Santa Anna Silica Sand Co. in the washing classification step to remove clay and minus 200 mesh particles from 50 tons/hour of glass sand. The DorrClone provides outstanding advantages of uniform automatic operation, reduced water consumption and dense underflow averaging 70% solids. The exclusive Vactrol underflow control insures smooth classification by automatic control of underflow consistency regardless of variations in raw sand feed rate or changes in size analysis of sand.

It will pay you to get the facts. Write for a copy of Bulletin No. 2501. THE DORR COMPANY, Stamford, Conn.
*In Canada:* 2¢ St. Clair Ave., E., Toronto 5.

DorrClone is a trademark of The Dorr Co., Reg. U.S. Pat. Off.

Better tools TODAY to meet tomorrow's demand

DORR

WORLD-WIDE RESEARCH • ENGINEERING • EQUIPMENT

THE DORR COMPANY • ENGINEERS • STAMFORD, CONN.

Offices, Associated Companies or Representatives in principal cities of the world.

# This "Flying Saucer" carries Truth!

### Crusade for Freedom brings hope to enslaved millions

The word "SVOBODA" on the balloon in this picture is the Czech word for "Freedom."

Supplementing Radio Free Europe in 1951, thousands of these "Flying Saucer" balloons were released by Crusade for Freedom along the borders of the Iron Curtain countries. They contained messages of hope and courage from millions of Americans who joined in the 1951 Crusade for Freedom.

### LOOK WHAT YOU DID

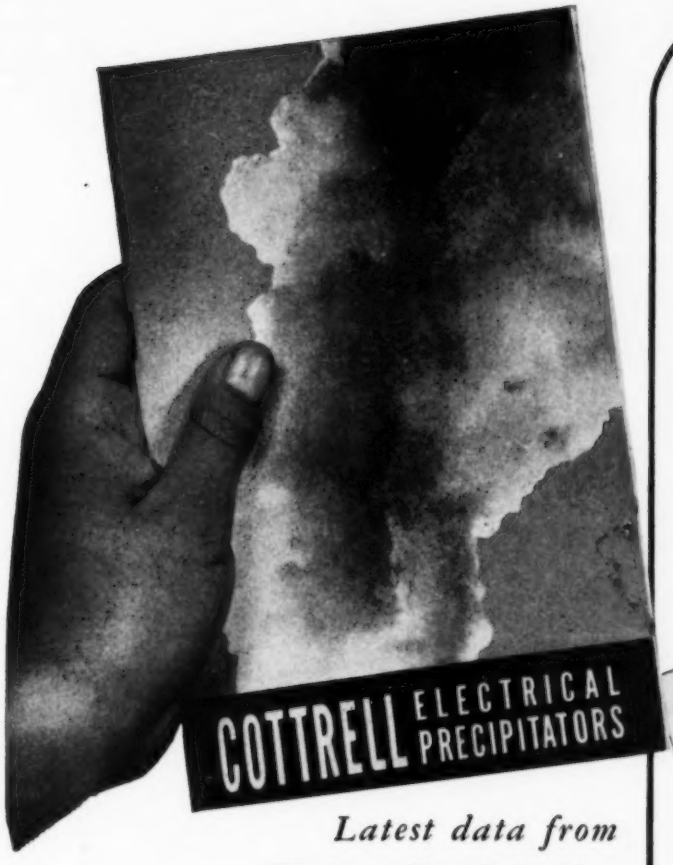
In the last two years the contributions of Americans to the Crusade for Freedom have amounted to $3,500,000. This money helped make possible Radio Free Europe's thirteen transmitters in Germany and Portugal. It also helped establish Radio Free Asia, which broadcasts to China in four different languages. These facilities are used daily to spike Communist lies and satisfy the hunger of millions for truth.

### MORE HELP NEEDED!

In 1952, at least $4,000,000 and the signatures of millions more Americans on leaflets ("Freedom-Grams") are needed—not only to carry on this operation but also to expand it on an even bigger scale.

*Support this crusade of truth now.*

## Help Truth Fight Communism!
## Join the Crusade for Freedom




# 40 PAGES of helpful information

## on Recovering Dusts, Fly Ash, Mists, Fumes and other Suspensions from Gases.

*This booklet summarizes*

the important points design and plant engineers should know about Cottrell Precipitators . . .

- Basic types of Cottrell equipment.
- Principal elements in a Cottrell unit.
- Data on Mechanical and Electronic Rectifiers.
- Various types of Collecting Electrodes (rod curtains, corrugated plates, pocket electrodes, etc.).
- Typical ways of removing collected material.
- Various Shell Constructions (steel, concrete, brick, etc.).
- The effect of various factors on efficiency and performance.
- Data on CMP (Combination Multiclone-Precipitator) Units.

. . . and many other helpful facts on Cottrell design and operation.

## *Latest data from Western Precipitation on Cottrell Recovery Equipment*

Do you have operations in your plant where gas-laden suspensions, wet or dry, are a problem? Such suspensions may be dropping on surrounding property, causing nuisance difficulties. Or perhaps important values are being lost in stack gases that can be profitably recovered. Whatever the nature of your recovery requirements, you will find this 40-page Cottrell booklet of great help. It contains up-to-date data on the latest advancements in the electrical precipitation field – prepared by the organization that pioneered the commercial application of Cottrell Electrical Precipitators almost a half century ago and has consistently led in new Cottrell developments.

**A copy of this data-packed booklet will be sent free to engineers and other executives interested in recovery processes. Send your request to our nearest office.**

*For nearly 50 years Western Precipitation has carried on a continuous research and development program on Cottrell Electrical Precipitators, Multiclone Mechanical Collectors and other types of recovery equipment. We are not affiliated with any other company in the electrical precipitation field except our wholly owned subsidiaries, International Precipitation Corporation and the Precipitation Company of Canada, Ltd. We are equipped to serve you anywhere in the United States, Canada, and throughout the world!*

WESTERN Precipitation CORPORATION

ENGINEERS, DESIGNERS & MANUFACTURERS OF EQUIPMENT FOR COLLECTION OF SUSPENDED MATERIALS FROM GASES & LIQUIDS

Main Offices: 1015 WEST NINTH STREET, LOS ANGELES 15, CALIFORNIA

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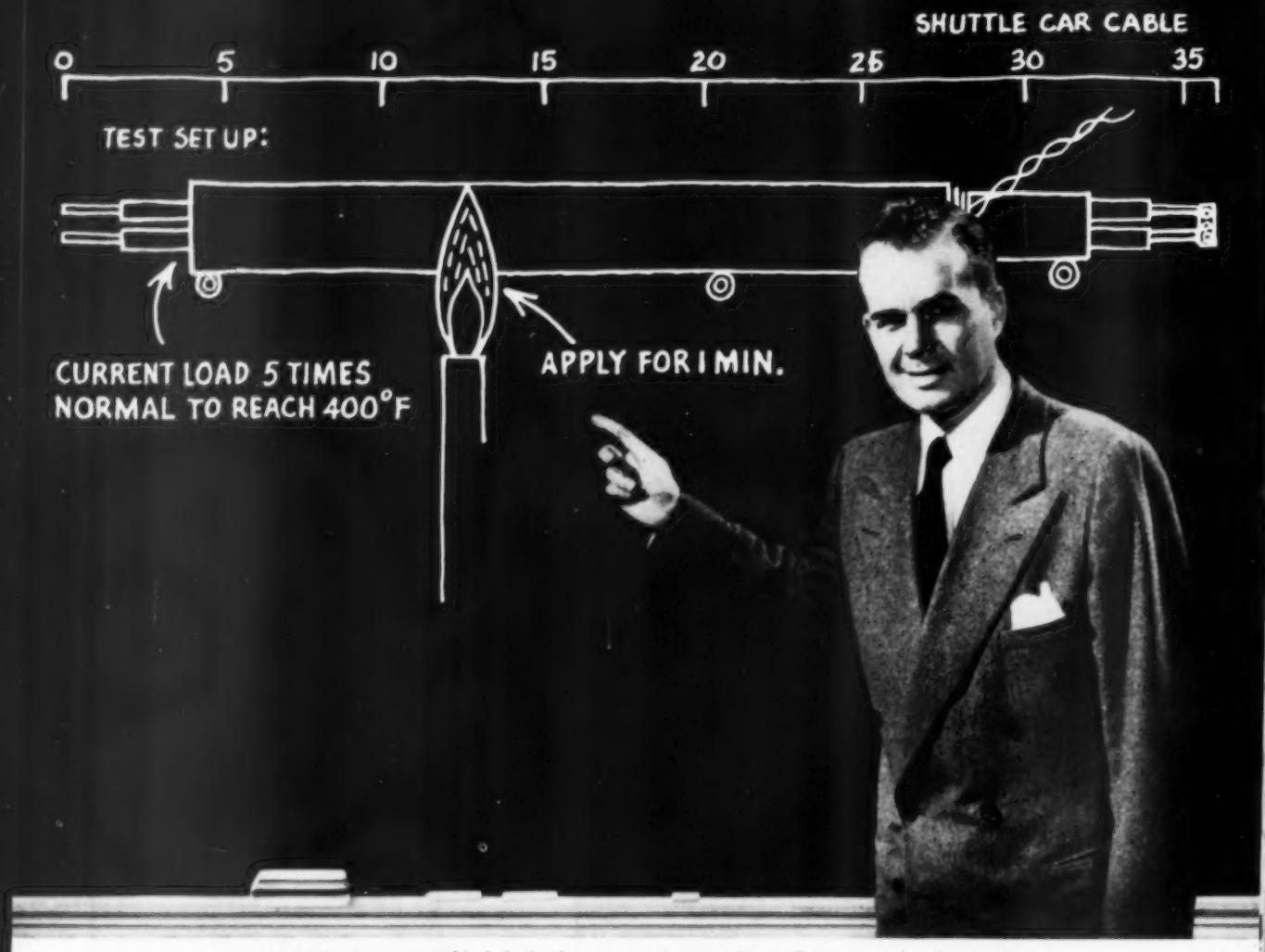
1429 PEACHTREE ST. N.E., ATLANTA 5 • HOBART BLDG., SAN FRANCISCO 4

PRECIPITATION CO. OF CANADA, LTD., DOMINION SQ. BLDG., MONTREAL




**APPROVED USBM TEST:** Cable fails if it burns more than 6 inches or flames more than 3 minutes.

# NO ANACONDA CABLE EVER FAILED THIS TEST

The U.S. Bureau of Mines flame-test for trailing cables is tough. But ANACONDA Cables have passed every time...*with ease*. That's not all! Performance-wise, a recent survey of shuttle cars in 15 mines found ANACONDA Cables last up to 300% longer than cables used only a few years ago.

**NEW FEATURES GIVE CABLE STAMINA**

These facts are as good a certificate of quality as any we know. As new features have been added to ANACONDA Shuttle Car Cables, each has been repeatedly tested on special, scientifically designed equipment. A new improved neoprene jacket is tougher, more flame-resistant. You'll find more strength and heat-resistance in the new cold-rubber insulation. The cable has also been stranded in a new and decidedly better way. No wonder it can take more abuse from overloads, compression-cutting, sliver-cuts in wet mines, rib-pinching, runovers and dragging. Patented breaker strip* and balanced tensile strength of ground and power conductors make it safer to use.

**A CLOSE LOOK AT CABLE COSTS**

Examine this cable yourself. Ask your Anaconda Sales Office or Distributor for a sample. Test it . . . tear it apart. Then look at the cost of *one* shutdown on any working face of your mine caused by *one* break in cheap cable. It far exceeds any possible saving from buying cable on price. Your own production figures soon prove the value of quality cable. *Anaconda Wire & Cable Company, 25 Broadway, New York 4, New York.* *U. S. Patent No. 2,455,773 53303

**ANACONDA®**

**TODAY'S HEADQUARTERS FOR MINE CABLE**

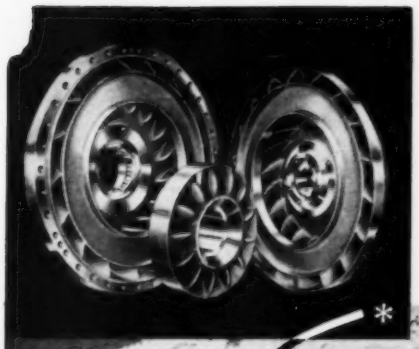
FLAT-TWIN CABLES FOR:
shuttle cars
continuous miners
loaders cutters
drill trucks

HI-VOLT CABLES FOR:
mine power

TYPE SH-D FOR:
shovels

TYPE SO FOR:
hand drills
remote control

TROLLEY WIRE
FEEDER CABLES
TELEPHONE WIRE
SHOT FIRE CORD
WELDING CABLES



## *Eventually EVERY Shovel Will be* **TORQUE CONVERTER** *Driven*

## *But You Can Profit by its advantages NOW with a* MANITOWOC

Get *extra* yardage, higher daily output, faster cycles, more bail pull, less breakage, smoother operation with a TORQUE CONVERTER equipped MANITOWOC.

Gives you *extra* power for tough going — smoother, faster acceleration throughout the entire cycle — enables you to handle bigger loads, shock loads, jars and jolts without damage to mechanism.

It's the greatest advancement in shovel history — and it's yours NOW, in the Manitowoc line. Manitowoc pioneered this development — more than twelve years ago — hundreds of units now operating. The big swing is to the mighty Manitowocs — Torque Converter driven. Get complete details from Manitowoc Engineering Corp., Manitowoc, Wisconsin.

### * BALANCED POWER

Engine operates at maximum efficiency at all times — full engine power for full loads — just enough power for light loads — automatically selected. Engine cannot be stalled — no delays waiting for engine to pick up speed.

### SMOOTHER OPERATION

Oil cushion absorbs jolts and jars. Saves cables, clutches, gears and assemblies. Less down time means more yardage.

### PRECISE CONTROL

"Fraction of inch" control by either hand throttle or foot accelerator, without slipping clutches or shifting speeds. Makes an expert out of an average operator. Ideal for crane service, setting steel and stone, and general erection work.

MANITOWOC

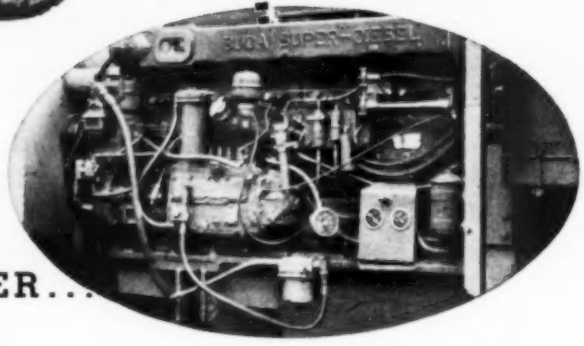
SHOVELS 1-5 YD. — Speed Crane — CRANES 18-100 TON

# BUDA DIESELS

## POWER WORLD'S LARGEST TRUCK*

*Based on total tire capacity less net weight.

Model 600 Dart — 60 Ton Capacity. Powered by two Buda 8 DAS-1125 Super Diesels




One of two Buda Super Diesels powering new Dart 600.

## BAGDAD COPPER *Again* PICKS BUDA DIESELS FOR *BIG* POWER... STAMINA...LONG LIFE!

Buda Diesels' superiority was demonstrated again when Bagdad Copper Mines picked two 8 DAS-1125 Super Diesels to power their new Dart 600 truck — called the largest truck in the world.

Deep, open pit mines are tough proving grounds for engines. The Buda Diesels powering other Bagdad haulage units are delivering such standout performance that Buda was the natural power choice for this giant new truck.

*Your nearby Buda Distributor can show you how Buda Diesels will increase your equipment performance and profits. Ask him today. Write for Bulletins and data. The Buda Company, Harvey, Illinois.*

**BUDA**

a Power-Full and Dependable Name in Engines

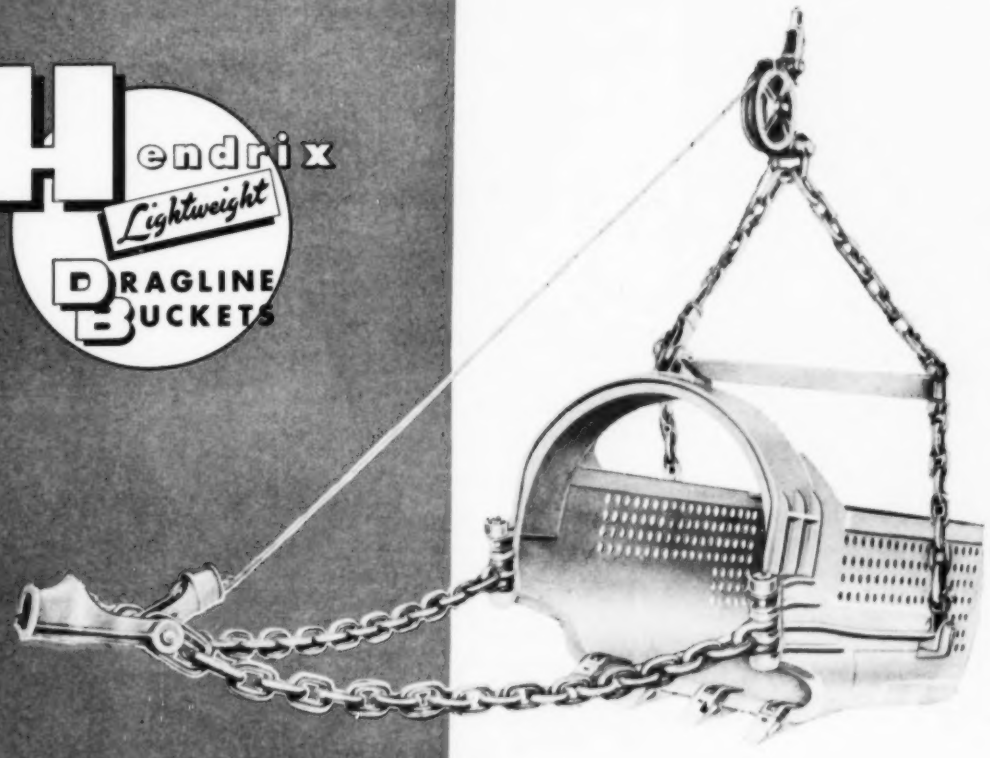
BC-32

# Profitable Operation

## on every job...

IT'S TRUE! Whatever the material... you get BIGGER LOADS with Hendrix Dragline Buckets... designed and built to eliminate excess weight without affecting the vital strength and rigidity of the bucket. This combination of minimum strength and durability assures EXTRA PROFITS on every job!

Hendrix Lightweight DRAGLINE BUCKETS



⅜ to 40 Cubic Yards

A TYPE AND SIZE FOR EVERY DIGGING PURPOSE

*Hendrix Buckets available without perforations on special order.*

HENDRIX MANUFACTURING CO., Inc.

MANSFIELD, LOUISIANA

# They're licked before they start

Super-Tempered Precision Space Screens defy Abrasion, Vibration and Fatigue to do their worst. These durable screens stay tight and give extra long wear on the most punishing jobs because they're made of hard and tough super-tempered steel wire that's precision crimped and woven on powerful hydraulic machines.

Specify Super-Tempered Precision Space Screens and find out how they save you money in less downtime and longer life; greater tonnage output at lower cost. To order, write or phone our nearest sales office.

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Chicago • Detroit • New Orleans • New York • Philadelphia
THE COLORADO FUEL AND IRON CORPORATION, Denver, Colorado
PACIFIC COAST DIVISION, Oakland, California

**SUPER-TEMPERED**
**PRECISION SPACE SCREENS** CF&I
PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION

1941

# FOR ACCURATE RECORDINGS...

To obtain reliable subsurface petroleum surveys, seismic prospecting crews demand accuracy to the "nth" degree in their field equipment—and especially in their explosives and E.B. caps. Hercules has pioneered in the development of many special seismograph products, including: the Vibrogel® series...which detonate under severe water pressures; Spiralok® . . . rigid dynamite cartridge assembly that saves time in loading; and the Vibrocap® SR series...detonators that reduce the danger of premature firing by static electricity, and eliminate "time-lag" between firing and actual detonation of explosives charge. Hercules has the right types of explosives and the service facilities to expedite their use in petroleum projects, coal mining, metal mining, quarrying, and construction.

**HERCULES POWDER COMPANY**
INCORPORATED

*Explosives Department, 960 King St., Wilmington 99, Del.*

Birmingham, Ala.; Chicago, Ill.; Duluth, Minn.; Hazleton, Pa.; Joplin, Mo.; Los Angeles, Cal.; New York, N. Y.; Pittsburgh, Pa.; Salt Lake City, Utah; San Francisco, Cal.

XR53-6

# Run Cool Under Constant Flexing—

# U.S. RAINBOW® V-BELTS

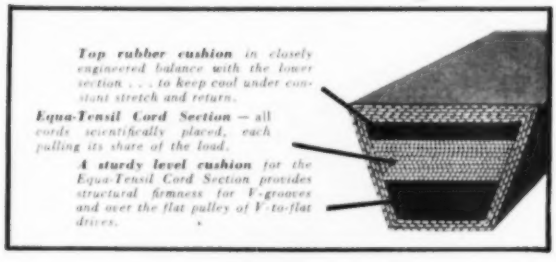
***Why U. S. Rainbow V-Belts are superior: No. 3 in a series.***

Why do U. S. Rubber V-Belts run so cool? Because the top and bottom sections have been specially built to reduce heat; specially compounded to provide elasticity, firmness and stability.

The pulling cords are specially latex-treated to reduce heat generated by constant flexing.

And every U. S. Rainbow Belt has U. S. Rubber's scientifically developed Equa-Tensil Cord Section that brings together the concentrated strength of the multiple pulling cords—distributes the pulling of the load so evenly among the cords that *each* carries its *full* share.

Order from your jobber, or contact any of our 25 District Sales Offices, or write to address below.


*Top rubber cushion* in closely engineered balance with the lower section . . . to keep cool under constant stretch and return.
*Equa-Tensil Cord Section* — all cords scientifically placed, each pulling its share of the load.
*A sturdy level cushion* for the Equa-Tensil Cord Section provides structural firmness for V-grooves and over the flat pulley of V-to-flat drives.

**A COMPLETE DRIVE SERVICE**

**MULTIPLE V-BELTS • F.H.P. V-BELTS • SHEAVES**
**FLAT BELTS AND BELTING • SPECIAL PURPOSE BELTS**

U.S. RUBBER
SERVING THROUGH SCIENCE

*"U.S." Research perfects it.*
*"U.S." Production builds it.*
*U.S. Industry depends on it.*

**UNITED STATES RUBBER COMPANY**

**MECHANICAL GOODS DIVISION · ROCKEFELLER CENTER, NEW YORK 20, N. Y.**

**Hose • Belting • Expansion Joints • Rubber-to-metal Products • Oil Field Specialties • Plastic Pipe and Fittings • Grinding Wheels • Packings • Tapes Molded and Extruded Rubber and Plastic Products • Protective Linings and Coatings • Conductive Rubber • Adhesives • Roll Coverings • Mats and Matting**

# *Increase Your Output up to 300%...*

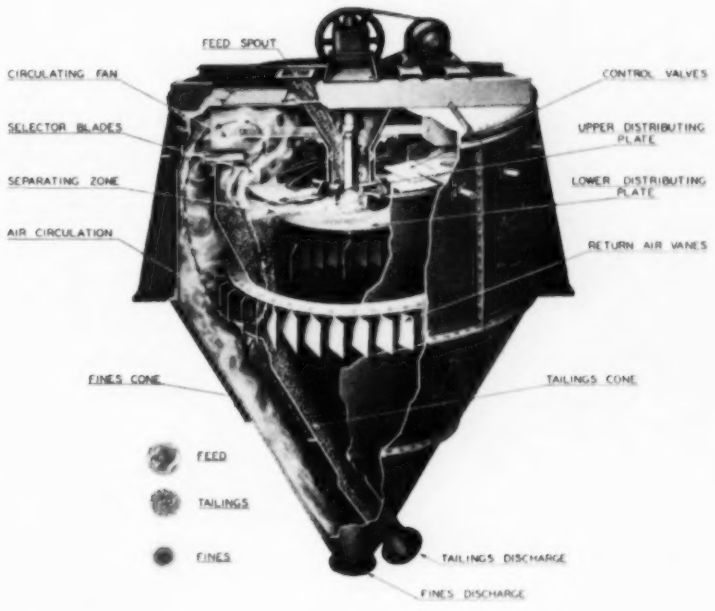
## Get Accurate Fines with...

# STURTEVANT

## *Whirlwind Centrifugal* SEPARATORS

The Sturtevant Air Separator is one investment that pays off daily profits by increasing production and reducing costs. Its extremely efficient operation assures finer separation of fine material from coarse material with the result that uniform quality of product is always obtained.

They'll not only increase your output by as much as 300%, but provide 10 to 50% savings in power costs, too. They are available in sizes 3 to 16 feet in diameter with capacities from ¼ to 50 tons per hour with a fine-product range of 40 to 325 mesh or finer. Bulletin 087 gives the entire story. Write for your copy.




### *Other Sturtevant Equipment for Increasing Production and Cutting Costs*

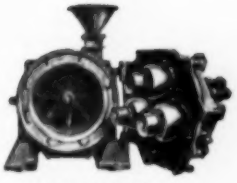
**MICRONIZER® GRINDING MACHINE**

A fluid jet grinding machine, the Sturtevant Micronizer speeds reduction of materials to low micron sizes. These jet mills are especially applicable in fields where a particle size in microns is desired.

Sturtevant Micronizer grinding machines are available in many sizes and capacities.

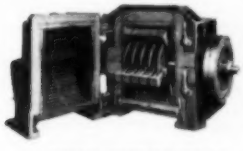
**ROTARY FINE CRUSHERS**

for intermediate and fine reduction (1" to ⅛"). Open door accessibility. Soft or moderately hard materials. Efficient granulators. Excellent preliminary Crushers preceding Pulverizers.



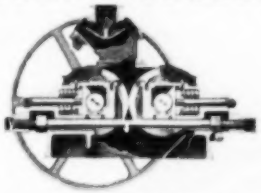
**RING-ROLL MILLS**

for medium and fine reduction (10 to 200 mesh), hard or soft materials. Very durable, small power. Operate in closed circuit with Screen or Air Separator. Open door accessibility. Many sizes. No scrapers, plows, pushers, or shields.



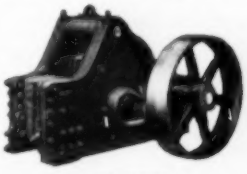
**SWING-SLEDGE MILLS**

for coarse and medium reduction (1" to 20 mesh). Open door accessibility. Soft, moderately hard, tough or fibrous substances. Built in several types and many sizes.



**CRUSHING ROLLS**

for granulation, coarse or fine, hard or soft materials. Automatic adjustments. Crushing shocks balanced. For dry or wet reduction. Sizes 8x5 to 38x20. The standard for abrasives.



**JAW CRUSHERS**

for coarse, intermediate and fine reduction of hard or soft substances. Heavy or light duty. Cam and Roller action. Special crushers for Ferro-alloys. Several types, many sizes.

## STURTEVANT MILL COMPANY

104 CLAYTON STREET, BOSTON 22, MASSACHUSETTS

DESIGNERS & MANUFACTURERS OF CRUSHERS • GRINDERS • SEPARATORS • CONVEYORS • MECHANICAL DENS AND EXCAVATORS • ELEVATORS • MIXERS

*Marion 10-yd. Rock Body, equipped with twin telescopic, double-acting hoist, for off-the-road operation.*

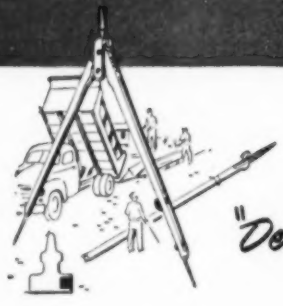
# A New Approach To Special Haulage Problems

● Marion offers a new approach to your haulage problems . . . an experienced approach that is coupled with engineering and manufacturing ability to design and produce whatever body and hoist equipment is needed for your particular operation.

Marion produces many standard models, too —we feel they are the finest on the market. But if your transporation needs call for something a little different, or even radically different, Marion can design and build it for you . . . quickly and economically.

To those who want experienced, imaginative assistance in the review of their haulage procedures, Marion offers a service which is unmatched in the industry today.

Your inquiries are welcome.



*"Designed on the Job"*

**MARION**
BODIES AND HOISTS

**METAL PRODUCTS CO.**
**Marion, Ohio, U. S. A.**

*Manufacturing a complete line of standard and special hydraulic hoists and dump bodies.*

# THE *ONLY* MODERN FRONT END ... ON QUARRY SHOVELS

110-B, 4½ cu. yd.
150-B, 6 cu. yd.
190-B, 8 cu. yd.

**Convertible Shovels — Draglines**

THE new Bucyrus-Erie Ward Leonard electric shovels bring to quarry loading the first important departure from the old-fashioned shovel front end. This advanced design — with two-section boom, inside tubular handle, and quiet positive rope crowd — increases speed and payload. It reduces upper boom weight, puts extra strength in the lower section where maximum strength is needed. It cuts out old-style handle racking and crowd pinions, takes the deadweight of crowd machinery off the boom. And, most important to *you*, it gives you all these field-proven performance advantages:

- **Lighter Weight, Greater Strength** — Two-section boom, with light upper section . . . lower section strut-connected to the A-frame.
- **No Handle Twist** — Inside tubular dipper handle is free to rotate in rubber-cushioned saddle block.
- **No Handle Binding in Saddle Block** — Rope crowd is quiet, positive, eliminates handle racking and crowd pinions.
- **No Dipper Wobble** — Twin dual hoist ropes put hoist power where needed for steady travel of dipper through bank.
- **No Sway Braces** — Widespread boom feet eliminate accessory boom braces or cables.
- **Low Swing Loads** — Advanced front end design, with crowd machinery on deck, cuts dead load on swing, steps up swing speed.
- **High Pay Loads** — Single tubular handle — with improved dipper back connections, dipper trip on saddle block, no dipper bail — reduces dead load on hoist, leaves more power for digging.

311-53C

**There's much more to the story, too. Deck machinery, electrical equipment, and mounting all match the front end in advanced engineering and outstanding performance advantages. The full story will convince you that yard for yard, dollar for dollar, pound for pound, these are the finest rock excavators ever built.**

***Write for Complete Information Today!***

BUCYRUS ERIE

**BUCYRUS-ERIE COMPANY** SOUTH MILWAUKEE, WISCONSIN

**Refractory test furnace** shown above is the only one of its kind in the industry. Temperatures up to 3180°F. check Permanente Periclase-Chrome brick for deflection, resistance to thermal shock and chemical attack—only three of 86 rigid tests for quality!

# 86 RIGID TESTS ASSURE LONGER HOT ZONE LIFE

## WITH PERMANENTE PERICLASE-CHROME BRICK!

If you are looking for ways to get longer hot zone lining life from your rotary cement kiln, take a look at this fact:

**Permanente Periclase-Chrome brick must meet at least 86 tests for quality and performance—far more than required for any other brick available today!**

The superior quality of Permanente Periclase-Chrome brick is increasing clinker production in kilns all over the country. One large cement producer reports:

**"With the whole length of the burning zone lined with Permanente brick . . . the lining will last 9 to 12 months—as much as 4 times longer than with the other brick used."**

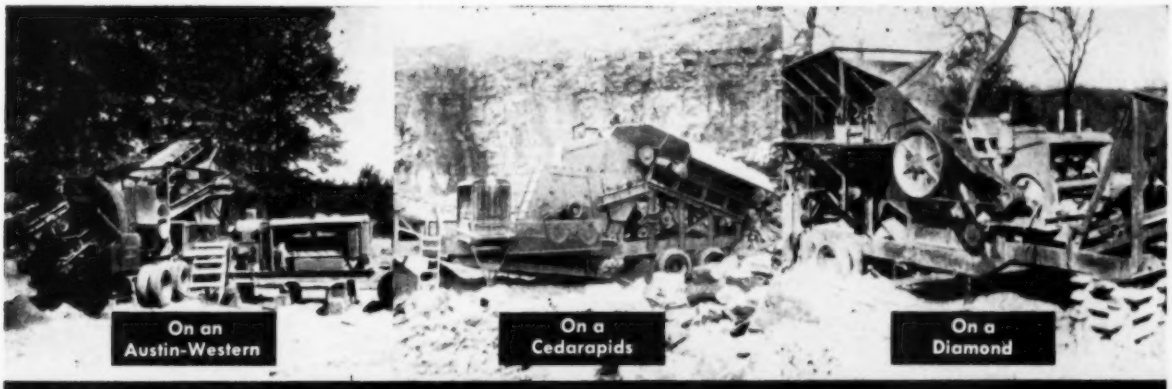
If an appraisal of your kiln performance would be helpful, our engineers will be glad to work with you.

**SEND FOR BOOKLET** giving installation procedures and for descriptive literature. Standard brick shapes available, both burned and chemically bonded. Installation service at no extra cost. Call or write principal sales offices: *Chemical Division*, Kaiser Aluminum & Chemical Sales, Inc., 1924 Broadway, Oakland 12, California; First National Tower, Akron 8, Ohio.

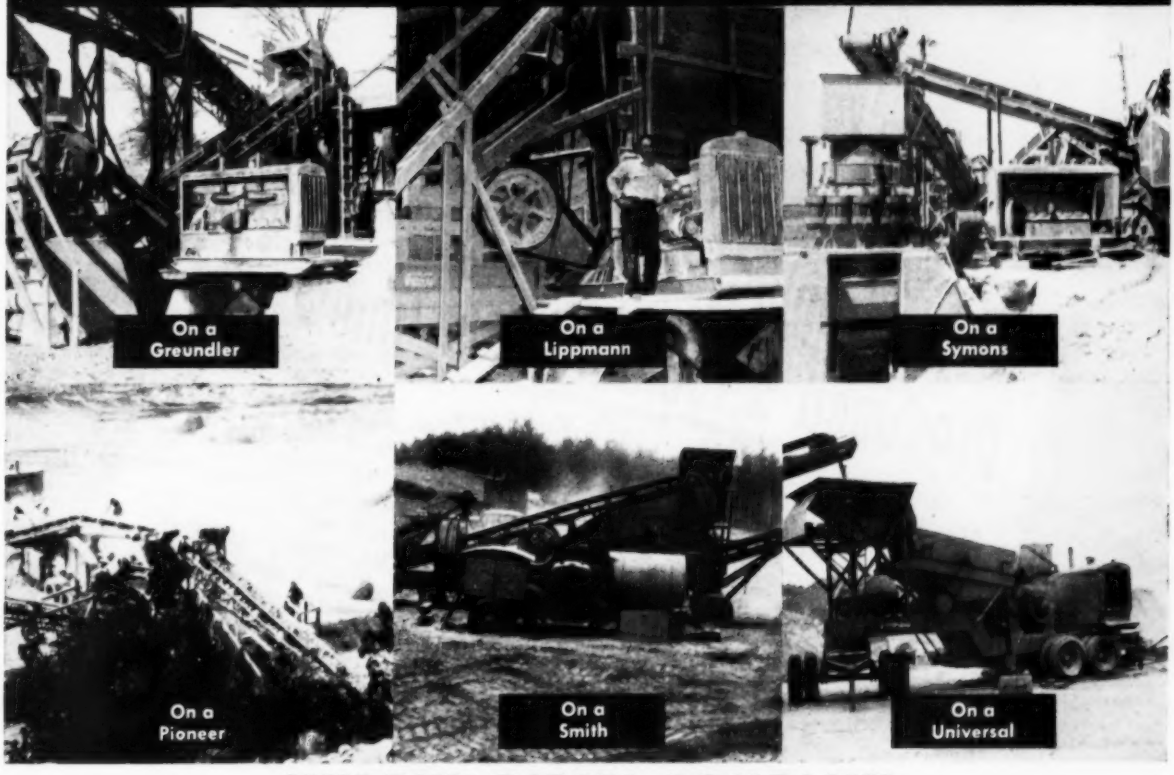
# Kaiser Chemicals

Pioneers in Modern Basic Refractories

**Basic Refractory Bricks and Ramming Materials • Dolomite • Magnesia • Magnesite • Alumina • Periclase**




# Your crusher will perform better with MURPHY DIESEL POWER




## MURPHY DIESEL COMPANY

5307 W. Burnham St. Milwaukee 14, Wisconsin

260

*Engines and power units 90 to 240 H.P.; generator sets 60 to 140 K.W.*

MURPHY DIESEL

## *Heavy duty power* for rock crushing

Murphy Diesel engines and power units are available in sizes from 90 to 226 H.P. Engine speeds are 1200 and 1400 rpm.

"Packaged" generating units are available with capacities ranging from 60 to 140 K.W. A.C. or D.C. voltages.

# This Simplicity screen has already produced 6,150,000 tons limestone!

**Simplicity Model D Double Deck Screen at McDonough Bros. Stone Company helps produce specially prepared limestone for metallurgical applications**

This 4′ x 12′ Simplicity Double Deck Screen at McDonough Bros. Stone Company in San Antonio, Texas, has already produced more than six million tons of metallurgical limestone. And it's still going strong. A 24″ belt conveyor, running at 600 feet per minute, delivers 300 to 400 tons of limestone an hour to a crusher. Then the Simplicity Gyrating Screen separates the plus 4½″ material on the top deck and the plus 2⅜″ material on the bottom deck. Simplicity Screens, like those in operation at McDonough Bros., can help insure fast, accurate sizing and processing in your plant. And the simplified power and operating mechanism of Simplicity equipment helps keep maintenance costs down. For complete information, consult a Simplicity sales engineer or write us today.

137

- SALES REPRESENTATIVES IN ALL PARTS OF THE U.S.A.
- FOR CANADA: Canadian Bridge Engineering Co., Ltd., Walkerville, Ontario
- FOR EXPORT: Brown & Sites, 50 Church Street, New York 7, N. Y.

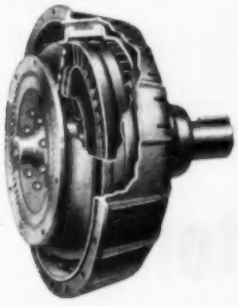
**Simplicity**
TRADE MARK REGISTERED
**ENGINEERING COMPANY • DURAND, MICHIGAN**

(Advertisement)

## How Hydraulic Coupling Works in a Power Shovel

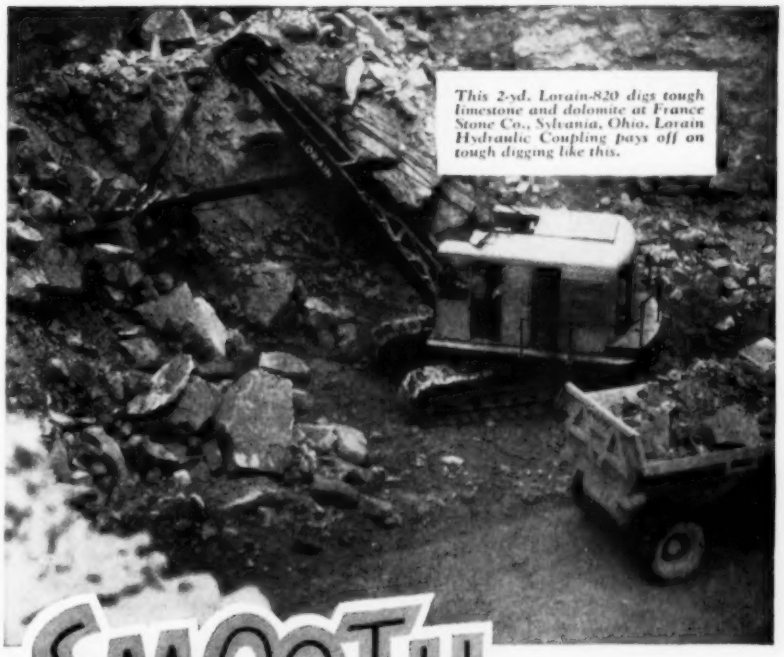
The hydraulic coupling type of power take-off has been proven over the years to add greatly to shovel-crane performance and life. It absorbs the impacts and shocks of hard digging, thereby reducing strain and wear on cables, machinery and engine, and it prevents the engine from stalling under any digging or lifting conditions — which is a time saving, machine-saving feature. These many advantages are readily acknowledged by most shovel-crane men, but even some of those who like what a hydraulic coupling does for them, find it difficult to understand just how it works.

It is a load limit clutch that efficiently transmits full engine power under normal



conditions but "slips" when a shovel dipper, for example, is "hung up" on an immovable rock. This allows the engine to continue to develop full torque, with no abnormal strain on it, the machinery or cables. There is no shuddering to a standstill with stalled engine and the immeasurable strain this puts on the whole machine, as encountered with a friction type of take-off.

Even with a mechanical, band type of slip clutch, which is meant to provide shock relief, a maximum point of shock must be reached first before it becomes operative and is released. On the other hand, the hydraulic coupling has an infinite number of points of release, so to speak, which comes into operation **before** the point of shock or overload is reached and not **after.** There is no surface friction, no mechanical wear, no overheating of parts. While it is mounted directly on the engine drive shaft, its "cushioning" effect would be as great no matter where it was located in the power train. It absorbs shock in both directions from itself thus giving protection from the dipper teeth to the engine. However, placed where it is, it acts on all phases of operation — hoist, swing, travel, crowd and retract.



*This 2-yd. Lorain-820 digs tough limestone and dolomite at France Stone Co., Sylvania, Ohio. Lorain Hydraulic Coupling pays off on tough digging like this.*

# SMOOTH is the word when it's a *LORAIN-820* in rock!

**Your eyes and ears can tell you what a beating your shovel takes in rock. It's a tough life — full of sudden shocks and impacts — that only the best design can withstand.**

**You will see a big difference in Lorain-820 shovel performance . . . the difference made by the use of Lorain's Hydraulic Coupling. This efficient fluid drive *smooths* out the shocks and impacts, *cushions* them before they have a chance to wrack and strain turntable mechanism and cables. Lorain's steady power keeps "hanging on" until the most unyielding rock is in the dipper — the toughest digging cannot stall the engine. Available air controls and air assist of crowd and travel operations make the operator's job smooth and easy. The net result — more rock in the trucks at the end of the day!**

**See a Lorain-820 in action. Ask your Thew-Lorain Distributor to show you the "smoothest" rock shovel you can buy.**

**THE THEW SHOVEL CO., Lorain, Ohio**

**SEE THE THEW LORAIN 820 ASK YOUR DISTRIBUTOR**

# THEW LORAIN®

**SHOVELS • CRANES • CLAMSHELLS • DRAGLINES • HOES**

# 1,000 ABK METAL wheels keep conveyors rolling at Basic Refractories

The largest dead-burned dolomite kilns in the world, at Basic Refractories, Inc., are fed by conveyors that roll on 1,000 wheels cast in ABK Metal. They're ABK because they must give long, trouble-free service while moving through variations of heat in an atmosphere of abrasive dust that is encountered in every cement or associated operation.

The controlled structure of ABK Metal—a Brake Shoe exclusive—makes these nickel-chrome iron castings far superior to other iron castings of identical hardness. Extended life of 4 or 5 to 1 is not unusual when ABK Metal replaces parts made of comparable metals. This is especially true where abrasion resistance is of prime importance.

Cut the cost of abrasive wear in your mill by specifying ABK Metal castings. Their long life will mean extra savings to you through reduced replacement, less maintenance and downtime costs and increased operating efficiency.

QUALITY CASTINGS IN ABK METAL... MEEHANITE®... DUCTALLOY METAL

AMERICAN Brake Shoe COMPANY

Chicago • Houston • St. Louis • San Francisco • Toledo 1948

BRAKE SHOE AND CASTINGS DIVISION

230 Park Avenue, New York 17, N. Y.

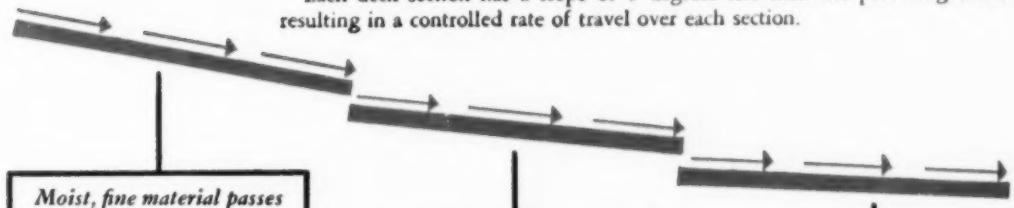
Ripl-Flo SCREEN with Tri-Slope DECK

# SCREENS

## Moist Fine Material

**No excessive blinding** and no shutdowns to clear the screen! With the "Tri-Slope" deck you can screen moist ½ x 0 to ¼ x 0 granular materials having high surface moisture. And you'll get more capacity than with a single slope deck of the same area.

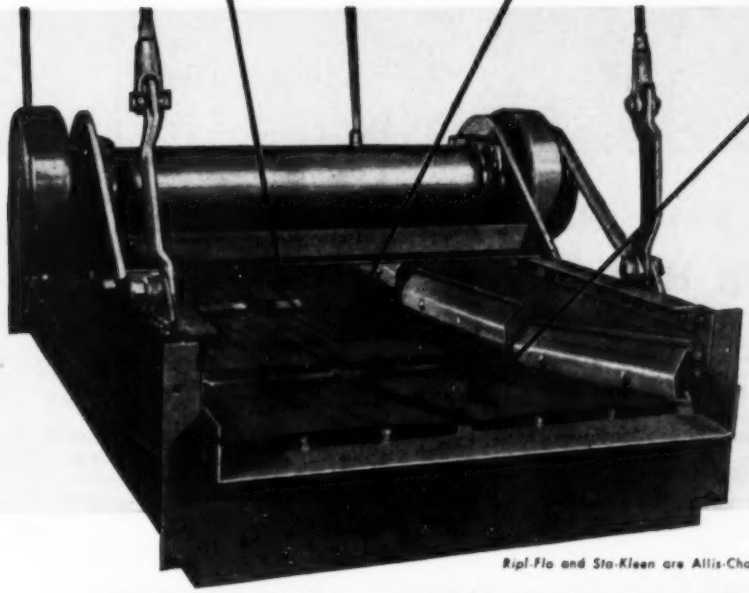
Each deck section has a slope of 5 degrees less than the preceding section, resulting in a controlled rate of travel over each section.



*Moist, fine material passes rapidly over the feed end section to reduce the depth of the bed.*

*It is then retarded on the intermediate deck to maintain proper bed depth.*

*It is slowed down still more on the discharge end section to pass marginal size particles.*



**Each section** of the "Tri-Slope" deck is designed for rapid stratification of the bed, resulting in high capacity. Moist, clogging particles are dislodged by the *Sta-Kleen* feature, consisting of bouncing rubber balls between the screen cloth and a ball retaining deck. The A-C representative in your area will gladly give you more details. Call him, or write Allis-Chalmers, Milwaukee 1, Wisconsin. A-3993

*Ripl-Flo and Sta-Kleen are Allis-Chalmers trademarks.*

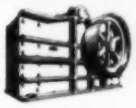
# ALLIS-CHALMERS

A-C ALLIS-CHALMERS

**Sales Offices in Principal Cities in the U. S. A. Distributors Throughout the World.**

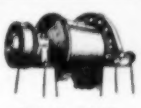
Hammermills

Vibrating Screens



Jaw Crushers

Gyratory Crushers



Grinding Mills

Kilns, Coolers, Dryers

# MARION 151-M

## SEVEN CUBIC YARDS

## This Big, Fast, Hard-Hitting Shovel Is Making History in Metal Mining

The seven-cubic-yard dipper of the MARION 151-M is only one indication of the work it can do.

The small-machine cycle time made possible by the world's finest electrical controls makes the 7-yard dipper of the MARION 151-M more productive than you might expect.

The month-after-month dependability of the 151-M, except for routine maintenance, is another big factor in year-long production output.

Don't say "seven isn't enough" until you see what others are doing with the biggest seven-yard performer that ever hit the mine pits.

Some of the biggest companies in mining are 151-M owners. More than half of these owners have two or more 151-M machines. Your nearest MARION District office can show you why.

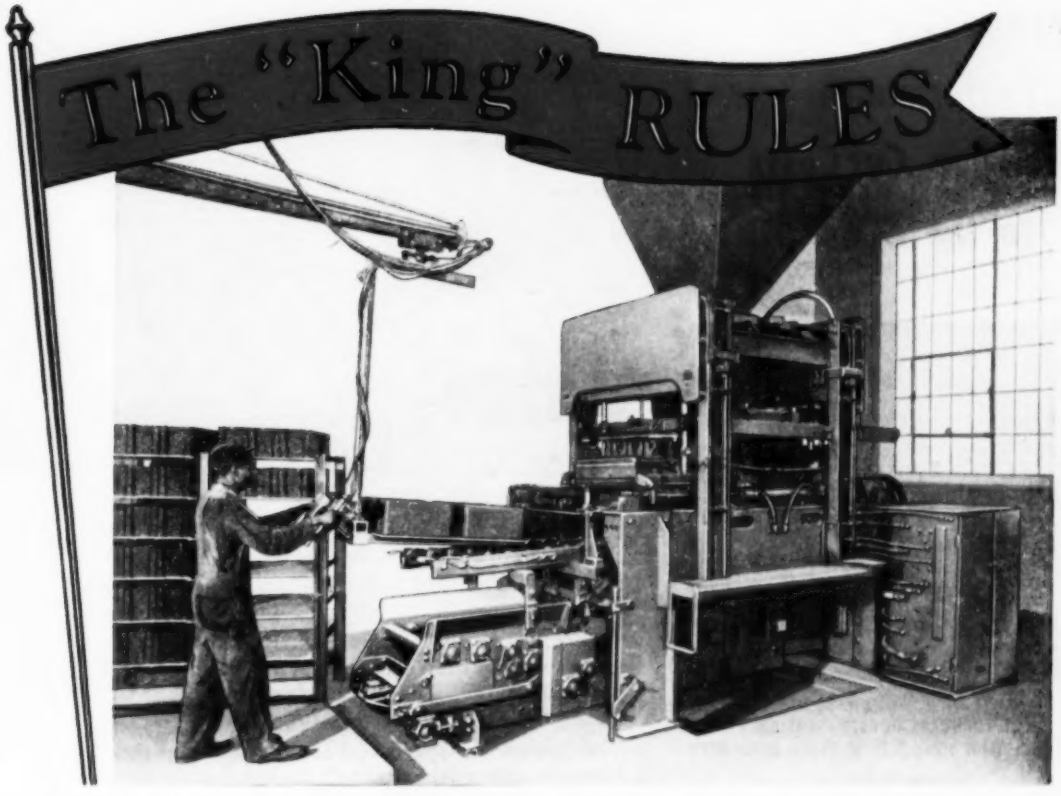
**MARION POWER SHOVEL CO.**
**MARION, OHIO, U. S. A.**

OFFICES AND WAREHOUSES IN ALL PRINCIPAL CITIES

November, 1953

THE CONCRETE MANUFACTURER

A SPECIAL SECTION OF PIT AND QUARRY




## because it's RIGHT!

**Yes, the GOCORP "King" is tops in each area in which it operates. That's because the blocks it makes are so superior, and are produced at a cost less than ordinary blocks. Here's a machine that represents the best and latest thinking of men with a lifetime of experience in this field. Block plant owners who have investigated, like the owner of this typical "King" operation, recognize these advantages GOCORP offers:**

- Hydraulic "sequence operation"—for high quality blocks, low maintenance.
- Vibrating mold filled directly from main supply hopper—no feed drawer.
- Intense vertical vibration, combined with pallet-to-mold clamping, assures compact, uniform units.
- "Tomorrow's machine today"—removes obsolescene risk.

**These are only a few reasons why the GOCORP "King" rules. If you want three or four cycles per minute—six blocks per cycle—with one operator—simultaneous production of two sizes, if desired—write for further details on the "King" and name of our representative near you.**

GO CORP
ADRIAN-MICH.
403 Grace Street Adrian, Michigan

# 84 FLOORS concreted with 'INCOR' in 69 WORKING DAYS

***Tight Schedules and Dependable 'Incor' Performance Save Time, Cut Costs to the Bone***

ST. NICHOLAS HOUSES—SECTION 3
Owner: NEW YORK CITY HOUSING AUTHORITY

General Contractors:
C. E. YOUNGDAHL & COMPANY, INC., Long Island City
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Architects: YORK & SAWYER, New York

Structural Engineers:
SEVERUD, ELSTAD & KRUEGER, New York

Ready-Mix 'Incor' Concrete:
JAMES A. NORTON, INC., New York

• Emphasizing utmost value for the public's building dollar, the New York City Housing Authority has encouraged many advances in building techniques, outstanding among which is widespread use of reinforced-concrete-frame construction.

Recent example is Section III, St. Nicholas Houses—six 14-story-and-roof units . . . first pour, March 22, 1953, topped out June 30 . . . 84 floors concreted by C. E. YOUNGDAHL & COMPANY, INC., in 69 working days.

Maximum job speed and economy, due to tight schedules, based on dependable 'Incor'* 24-hour stripping strengths . . . engineered forms, built to closest tolerances for streamlined erection efficiency . . . expert utilization of skilled work force.

Further proof that sound planning and open-minded co-operation among Designer, Builder and Owner make it possible to obtain the fire-safety and structural soundness of concrete, at costs and erection speed which equal or beat any other type of construction.

*Reg. U. S. Pat. Off.

LONE STAR CEMENTS COVER THE ENTIRE CONSTRUCTION FIELD

## LONE STAR CEMENT CORPORATION

Offices: ABILENE, TEX. • ALBANY, N.Y. • BETHLEHEM, PA. • BIRMINGHAM
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LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 18 MODERN MILLS, 129,000,000 SACKS ANNUAL CAPACITY

The CONCRETE MANUFACTURER

November 1953

# Safety and Small Concerns

THERE has long been a considerable amount of evidence indicating that relatively small industrial concerns contribute far more than their proper per capita share to the total annual accident toll. The fact is hardly surprising, but it was more firmly nailed down when the National Safety Council released not long ago its most recent figures on the subject.

The Council's figures indicate that although more than 90 percent of all businesses have fewer than 100 employees, the total work force of such concerns accounts for only 44 percent of the national labor force. Yet these same small concerns persistently show injury rates which run from two to five times higher than those which apply to large companies.

These data should occasion not only considerable interest, but some soul-searching introspection on the part of top management in the concrete industries. In this field of enterprise relatively small concerns are bound to be the rule rather than the exception, and such statistical data as are available on the subject of safety indicate that there is no excuse at all for the complacency with which the whole subject appears to be regarded.

We would be the first to admit that small concerns are under a serious handicap in respect to many aspects of an all-out accident prevention movement. For one thing, their very smallness has an unmistakable tendency to de-emphasize or camouflage the problem, since the two or three accidents a year which may occur in the average plant hardly seem worth running a temperature about. Even when the importance of accident prevention is recognized, too often the facilities, the manpower, and the money are not available to permit a prompt, effective assault on the problem.

It has long seemed to us that the industries' trade associations could do a great deal to better the performance of their members in respect to safety by accepting the problem as an industry rather than an individual affair. It is obviously impossible for companies which employ a dozen or two dozen men to hire full-time safety directors. But a trade association supported by several hundred such companies could certainly well afford the cost of two or three trained safety engineers.

Obviously two or three men could no more undertake the full responsibility for accident-prevention work in several hundred plants than can the present administrative heads and technical directors of the several industry associations assume the full responsibility for management and engineering for the various member companies. But they could focus attention on weak spots, offer prompt consultation service, study industry performance, recommend procedures, and generally act as spark plugs to set off the thousand and one small explosions needed to get any effective safety program rolling.

Far from representing any additional operating expense to the member companies, we firmly believe that this sort of attack on the safety problem would yield fat dividends almost immediately. Many members of the Portland Cement Association believe that all the dues they have ever paid into that excellent trade organization have been repaid many times over by the operations of its safety division alone.

No association can impose such a program upon its membership, but we think the question might well be placed upon the agenda of some of the forthcoming conventions, even if it achieved no more than to indicate that there is some interest in the subject.

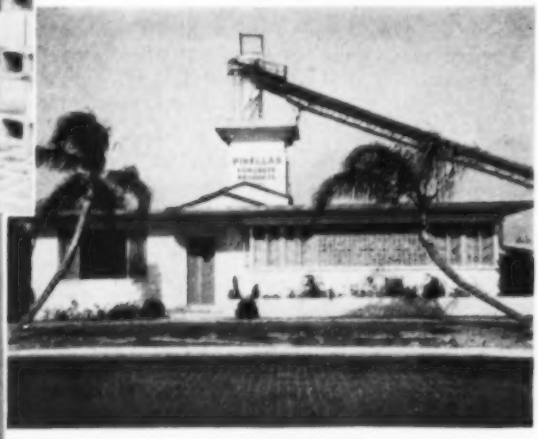
William M. Avery

# *Another Leader** IN THE PRODUCTS INDUSTRY PREFERS BESSER VIBRAPACS!

Ernest Kilgore, Mgr., Pinellas Concrete Products, St. Petersburg, Florida.

★ This is the 103rd of a series of ads featuring leaders in the Concrete Products industry who are stepping up block production with Besser Vibrapac machines.

## One Vibrapac Produces 3,000,000 Block Annually in this Progressive Florida Products Plant



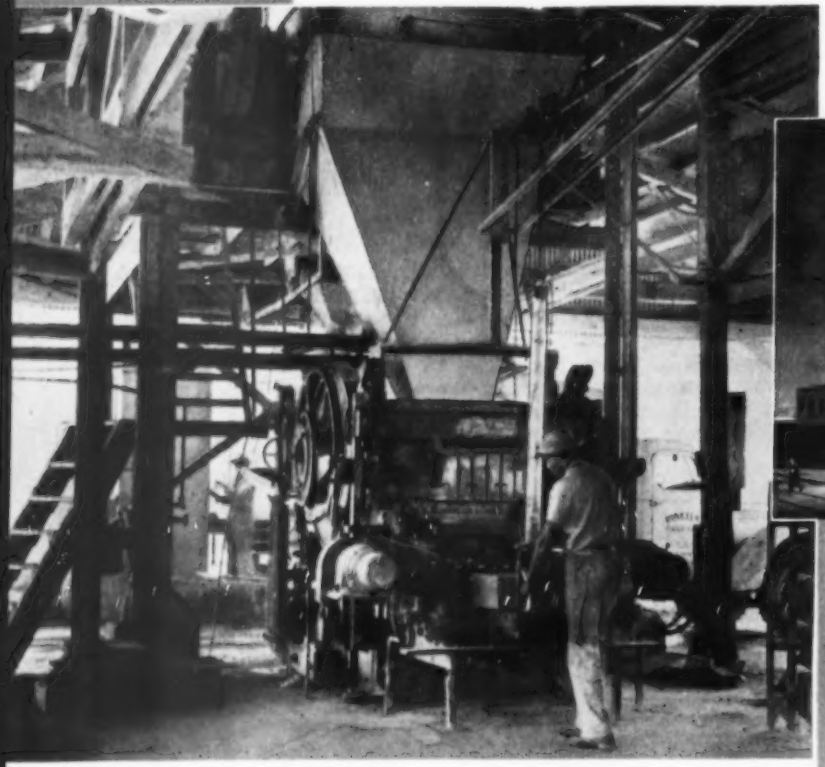
Office Building of Pinellas Concrete Products, St. Petersburg, Florida — a good example of concrete masonry construction.

Pinellas Concrete Products, St. Petersburg, Florida, is a typical Vibrapac plant operating on a 24-hour a day schedule of uninterrupted block production. The company installed an Automatic Vibrapac block machine in January, 1946. With this one machine, as many as 3,000,000 high-quality 8" units, or equivalent, are produced annually.

This high rate of block production is maintained day-in and day-out, with no downtime, because Besser equipment is built to withstand long hours of continuous operation. Mr. Ernest Kilgore, Manager of the Pinellas plant, is well pleased with the performance of his Automatic Vibrapac.

Ask Besser today how you can step up block production in *your* products plant.

**BESSER MANUFACTURING CO.**
*Complete Equipment for Concrete Products Plants*
ALPENA, MICHIGAN, U. S. A.



Webb's City — the World's most unusual drug store with annual sales of $22,000,000. Pinellas has furnished 100,000 Vibrapac 8" units for Webb's City buildings.

Besser Vibrapac in Pinellas plant. Fully automatic. No manual lifting. Off-bearer merely guides the power hoist. Lightweight units are made from a good quality pumice which is shipped by steamer across the Atlantic Ocean from Greece.

A 7530-1PBC

**BESSER**

BATCH MIXERS · SKIP LOADERS · BLOCK & BRICK CUBERS · SUPER VIBRAPAC · SINTERING PLANTS · ACROW CENTERS · ROOF TILE MACHINE

# news of the concrete industries

## Conference on Concrete Scheduled Jan. 12-13 At Vanderbilt University

Vanderbilt University, at Nashville, Tenn., will conduct its second annual Quality Concrete Conference on January 12 and 13, 1954. Following the same procedure which made the program an outstanding success last year, the conference will feature talks, moving picture films, actual demonstrations, and a question-and-answer panel. The principal speakers will be outstanding authorities in the fields of ready-mixed concrete, concrete products, cement manufacture, and testing.

The course will be held in the new engineering building under the direct supervision of Professor William H. Rowan. Inquiries related to the program should be addressed to Professor Rowan at Vanderbilt.

## Featherweight Pontoons Used To Support Heavy Loads

Superlite, a new lightweight concrete pontoon, was introduced recently in the Puget Sound area by the Graystone Concrete Products Company, Seattle. These pontoons, which are produced in three sizes, weigh only 60 lb. per cu. ft., as compared with 90 lb. per cu. ft. of Graystone's standard lightweight expanded-shale Graylite.

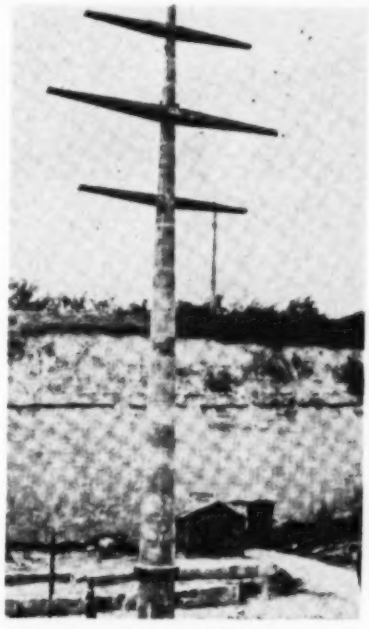
When the two cells of a pontoon are filled with water, it can be submerged and moved into position. However, it remains buoyant even if one cell becomes damaged. Pontoons of the largest size—4 ft. by 4 ft. by 24 in.—will support a weight of 2,750 lb. They are used in boathouses, floats, houseboats, and rafts in fresh or salt water.

Graystone manufactures Superlite pontoons under a special license from the inventor, Olaf Tellefson, a naval architect.

## Natl. Brick & Supply Co. Installs 6 Big Autoclaves

To mark the installation of six high-pressure steam autoclaves at its plant at Terra Cotta, D. C., the National Brick & Supply Company, Inc., entertained at a "christening party" on September 24.

Described as "the largest one-plant installation in the United States," the battery of autoclaves really is sizeable. Each unit is 120 ft. long by 8 ft., 1 in. inside diameter, and weighs 52 tons.



● According to THIS EARTH (Permanente Cement Company), from which we culled this picture, "No cracks appear in this 100-ft. concrete transmission pole near Paris in high winds because it was prestress-built." Some idea of the height of the pole can be gained from the pygmy-like man standing at its base. We also learned that "a fishing pole has been fashioned from concrete that was prestressed with a steel wire"—not pictured!

## N.C.M.A. Sponsors Project In Research on Concrete At Iowa State College

According to the N.C.M.A. *Reporter*, the association has sponsored a research project at Iowa State College for laboratory work on two problems: (1) To determining quantitatively the adhesion of mortar to concrete masonry units; the effect thereon of selected variables; and the possible correlation between bond and certain measurable properties of the mortar and concrete. (2) To determine the flexural properties of concrete masonry walls supported at the ends, and with the transverse load transmitted horizontally to the end supports.

The investigations were planned by R. E. Copeland, N.C.M.A.'s director of engineering, and are being conducted by Professor A. R. Livingston under the general supervision of Professor H. J. Gilkey, both of Iowa State College.

## Mason Contractors to Meet At Chicago January 24-27

The 1954 convention and show of the Mason Contractors Association of America will be held from January 24 through 27, 1954, at the Sherman Hotel, Chicago, Ill.

The show is the only exhibition devoted exclusively to the mason contracting industry. Advance reservations indicate that this year's show will bring the mason contractors the largest display of masonry products and equipment ever assembled, along with the newest developments in products, methods, and equipment.

## *In This Issue*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## Moss, Rescolite Company Open Plants for Production Of Lightweight Aggregate

News of two lightweight aggregate operations has been received recently. At Memphis, Tenn., the Moss Lightweight Aggregate Company, a subsidiary of the John A. Denie's Sons Company, is producing expanded clay aggregate in its new plant. This material, Denilite, is made on a traveling-grate type machine designed for 24-hour production of 750 cu. yd. N. A. Moss is president, and Forrest Ladd is vice-president of the firm.

The Rescolite Company at Fort Smith, Ark., turns out expanded shale aggregate which is sized before being expanded in 8- by 125-ft. rotary kilns. After expansion the material is screened into three sizes, which are later recombined to meet the consumer's fineness modulus requirements. According to Raymond F. Orr, president, production will be approximately 50,000 cu. yd. per year. Other officers of the firm are George Junkin, vice-president and general manager, and Charles W. Alverson, sales engineer and technical adviser.

a general commercial district under which the present use of the property is not permitted. However, by force of the new ordinance, it becomes a nonconforming use, Mr. Maloney noted. This use may be continued under the new ordinance which, if it failed to contain nonconforming-use provision, could be declared invalid in its entirety by the courts.

"Well—you insisted we build with indestructible block."

## Donald H. Herak Named To P.C.A. at Spokane To Succeed R. E. Tobin

Donald H. Herak has been appointed district engineer of the Spokane (Wash.) office of the Portland Cement Association, effective October 1, according to an announcement released by Carl D. Franks, association president. Mr. Herak succeeds Robert E. Tobin, who has accepted a position as engineering consultant for the Spokane Concrete Pipe Co., which operates plants in Montana, Washington, British Columbia, and Alaska. Mr. Herak joined the P.C.A. staff in August, 1951, as field engineer for the Spokane office. A graduate in 1946 of Gonzaga University, Spokane, Mr. Herak has a B.S. degree in civil engineering.

Mr. Herak is a member of the American Society of Civil Engineers and the Washington Structural Engineers Society. He won first prize in the state of Washington in General Motors' recent Better Highway contest. As district engineer of the Spokane office, he will direct Association activities in eastern Washington and northern Idaho.

## Pine Hill Concrete Mix Corp. Awarded Decision on Zoning

Operations of the Pine Hill Concrete Mix Corporation, 2255 Bailey Ave., Buffalo, N. Y., were held lawful by Corporation Counsel Fred C. Maloney. Under the city's old zoning ordinance, the plant was lawfully located in a first-industrial zone, Mr. Maloney pointed out in an opinion to the Council Legislation Committee.

In the new zoning ordinance, effective last July 30, the premises were placed in

The Texcrete Company of Shreveport, La., now has a fleet of six delivery units —four trailers and two smaller units. Each of the four trailers can carry 1,440 Haydite blocks, or enough for the exterior walls of an average five-room house.

---

At Wenatchee, Wash., the Concrete Products Association of Washington held its 25th annual fall meeting on September 19. John Ruhling, American Concrete Pipe Association, was one of the speakers.

## Honorary Membership Conferred On Dale by Ohio Association

Carl K. Dale, president of A. C. Dale & Son, Columbus, Ohio, was recently elected an honorary member of the Ohio Concrete Block Association, Inc., in recognition of his services in organizing the association.

Mr. Dale, a past president of the Columbus Block Association, Inc., was chairman of a Columbus committee which launched the state organization. He was the first member to be honored with the distinction of honorary membership.

## Coming Events

*November 12-14, 1953—Williamsburg, Va.* Fall meeting. Southeastern Concrete Pipe Association, The Inn and The Lodge.

*November 15-17, 1953—Charleston, S. C.* Annual meeting, Southeastern Concrete Masonry Association (branch of National Concrete Masonry Association). Fort Sumter Hotel.

*January 17-21, 1954 — Chicago.* Tenth annual convention and exposition, National Association of Home Builders. Conrad Hilton and Sherman hotels.

*January 19 and 20, 1954—Milwaukee.* 34th annual convention, Wisconsin Concrete Products Association. Plankinton Hotel.

*January 24-27, 1954—Chicago.* Annual cconvention and exhibit, Mason Contractors' Association of America, Inc. Sherman Hotel.

*January 28 and 29, 1954—Toronto.* Conference on prestressed concrete, sponsored by the Extension Department of the University of Toronto.

*February 7-10, 1954—Washington, D. C.* 34th annual convention, National Concrete Masonry Association. Shoreham Hotel.

*February 15-19, 1954 — Chicago.* 24th annual convention, National Ready Mixed Concrete Association, with machinery exposition. Conrad Hilton Hotel.

*February 22-25, 1954 — Denver.* Annual convention, American Concrete Institute. Shirley-Savoy Hotel.

*February 24, 1954—San Francisco.* 4th annual convention and meeting, American Concrete Agricultural Pipe Association. Fairmont Hotel.

*February 25-27, 1954—San Francisco.* 46th annual convention, American Concrete Pipe Association. Fairmont Hotel.

"...more than **4 years and 36,541 cubic yards** of concrete later..."

Left: Western's first Challenge 5 Yard Mixer.

Roy Walton (facing camera), President of Western Concrete & Equipment Company, Los Angeles, watches his first Challenge Mixer operating at peak efficiency, discharging the 36,541st cubic yard of concrete.

This was the first of 40 Challenge Mixers purchased by Western Concrete & Equipment Company. According to Mr. Walton, it has been operated continuously ever since it was purchased in September, 1949, carrying an average of 175 cubic yards of concrete per week.* **"Now," says Mr. Walton, "more than 4 years and 36,541 cubic yards of concrete later, the drum has never been relined, nor does it look as though it will need relining for a long time to come. The only expense we have had on our entire fleet of 40 Challenge Mixers has been normal maintenance and service. And that, by the way, is far less than for our other make mixers."**

**Here is "proof positive" that CHALLENGE also sets the standard for extra long, dependable drum life!**

**CHALLENGE TRUCK MIXERS**
**QUALITY STANDARD OF THE INDUSTRY**

***In many communities, conditions do not allow this heavy volume of continuous operation. Actually in some areas, this yardage represents 6 to 8 years mixer life.***

Get the complete story of Challenge . . . made in 3, 3½, 4, 5, 6, 6½ cubic yard sizes. Use the return coupon for the name and address of your nearest Challenge dealer.

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Please send name and address of my nearest Challenge Dealer, together with catalog showing complete line of Challenge Mixers.

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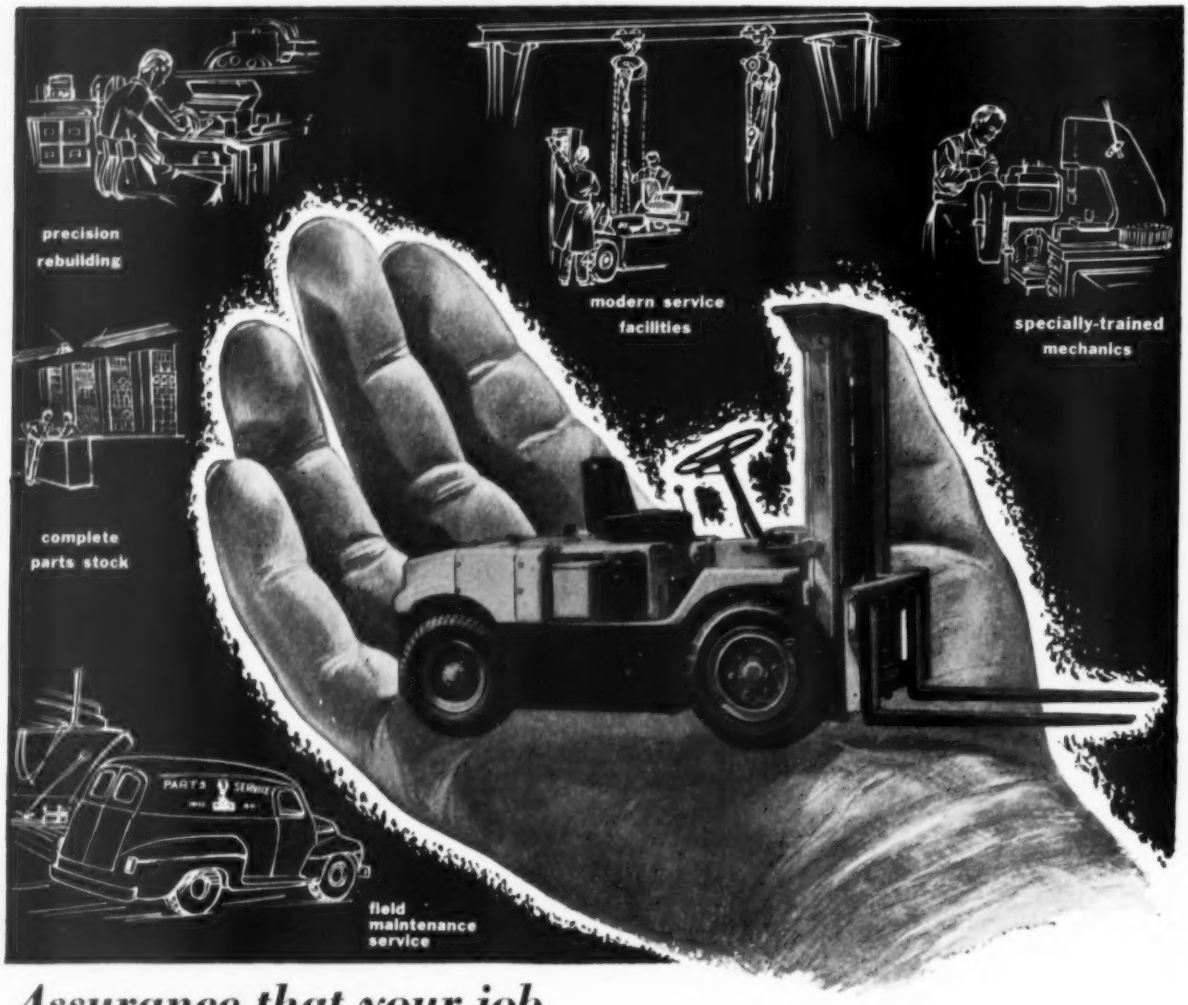
Exclusive National Distributor For CHALLENGE TRUCK MIXERS — *Standard of The Industry*

**MEMBER N. R. M. C. A.**

# THE FRIENDLY HAND OF HYSTER SERVICE...

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Your Hyster Dealer not only places the *right* lift truck and attachment (and there's over 100 attachments) on your job—but *follows through* to provide all that is necessary to insure satisfactory, continuous and profitable operation of your Hyster Lift Truck. In many instances, a periodic service plan is available to make sure your Hyster Truck stays in top operating condition.

**In Persian Gulf off coast of Arabia.*

Hyster Dealers not only offer the finest service facilities but also the most complete line of industrial trucks on the market today (1000-30,000 lbs. capacity).

Your Hyster Dealer is a specialist in materials handling who is in constant touch with scores of industries. He can help you to *spot* and *stop* profit leaks in your operation. Call him today, or write for Catalog 1277 to:

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# Help! Help!

**A get-together department for those who have problems or queries concerning the concrete industries and those who (we hope) have the answers. Please address all communications to The Concrete Manufacturer, 431 South Dearborn Street, Chicago 5, Ill.**

***Colored Aggregates*** A surprising number of the letters we have received in recent months contain requests for information concerning sources of supply of colored aggregates. A reader in New York state, for example, wants to purchase red and/or green stone screenings, and we assume from the way his inquiry is worded that he does *not* want an artificially colored product. We are aware that known deposits of nonmetallic minerals represent just about every color in the spectrum, but the crux of the matter appears to be whether or not anyone is currently making a business of marketing such materials as aggregates.

***Coating For Molds*** A manufacturer of tamped cast stone writes that he is having trouble finding an effective material for coating his wooden molds to facilitate clean stripping. He is using automobile lacquer at present, but finds that even this high-priced coating wears off quickly, and that water penetrates it before the material has begun to wear away. His experiments with a wide range of separating agencies have so far failed to turn up any material which will prevent concrete from sticking to the molds for more than a short time. Our correspondent suggests that firms applying Perma-Stone may have the solution for this problem.

***Mortar Tool*** A reader in Missouri wants to know if there is a successful tool on the market for automatically (or semi-automatically) placing narrow ribbons of mortar on concrete masonry units as they are laid up. We have printed publicity items on several devices of this sort, but we have no information to indicate that any are currently being manufactured.

***Volume Computer*** A ready-mixed concrete producer would like to know where he can obtain plastic concrete volume computers to give his customers. A number of concerns make promotional items of this type to the purchaser's specifications, but we assume that in this case what is desired is a mass-produced low-cost item.

## Tilt Up Wall Construction Proves Practicable Method

Tilt-up wall erection is going strong in many areas throughout the country. At Tracy, Calif., wall panels which were preformed at the Basalite Rock Company's plant in Napa, Calif., were put in place by cranes at the home site. Subsequently the walls were welded at top, bottom, and sides, and then caulked and finished to simulate stucco.

Other tilt-up jobs are poured on the site and then raised by cranes. This technique was recently employed in the construction of the Maxitrol Company's plant in Redford Township near Detroit, Mich.

## Florida Concern Operating In Newly Constructed Plant

A new completely automatic plant is the home of R. H. Wright & Son, Inc., at Fort Lauderdale, Fla., producers of ready-mixed concrete. It is reported that the plant is geared to produce and deliver about 1,500 cu. yd. of concrete daily.

Trucks are dispatched by means of a two-way radio system, which directs the movements of 15 transit-mix trucks, four pick-up trucks, and four salesmen's cars. Each customer's order is automatically recorded on tape, stating the quantity, time, and date.

Equipment is operated according to the latest technical developments, and completely scientific control of mixes, together with daily screen analyses, insures a high-quality product. Wyatt B. Hodges is president of the firm; George Ford is vice-president and general manager. The company dates back to 1941, but was not organized until 1943.

## Contracts Now Awarded For Work on 124 Miles Of Ohio Pike Project

A total of 124.6 miles, or 51.6 percent, of Ohio Turnpike Project No. 1 is now under contract, according to the Ohio Turnpike Commission. This point was reached recently when the Ohio Turnpike Commission awarded $21,264,128.35 in roadway contracts and $1,722,807.50 in structural steel contracts, the largest total of awards ever made by the commission at a single meeting.

Altogether, 33 construction sections, including the four largest bridges, out of the 62 construction sections on the 241-mile Turnpike are now under contract.

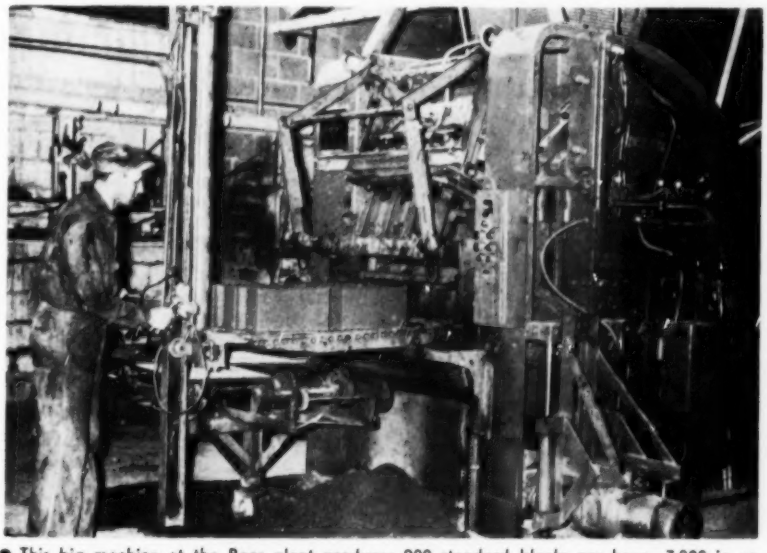
## Plant Expansion Completed As Firm Rounds Out 50 Years

Owner Ernest Rees and employees of the Rees Cast Stone Company in Dover, Ohio, recently celebrated the 50th anniversary of the founding of the firm. It was a double feature affair, since the plant had just been completely remodeled and enlarged.

Founded in 1903 by the late James Rees, the business was taken over in 1923 by his son, Ernest Rees, who moved the facilities to the present site in 1925. Since last December a Stearns Model 15 automatic block machine has been in operation at the plant, turning out 15 units (8 by 8 by 16 in.) per minute. It is expected that the 1953 total output will reach 3,000,000 standard units.

The new "15" and other recently installed equipment have been featured in industrial movies which will be shown at the next annual convention of the National Concrete Masonry Association in Cleveland, Ohio.

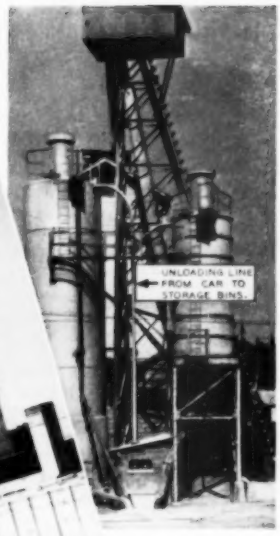
The management expects that within a short time 50 per cent of the plant's output will be lightweight block. Merle Van Alstyne, who has been with the concern since 1924, is plant foreman.

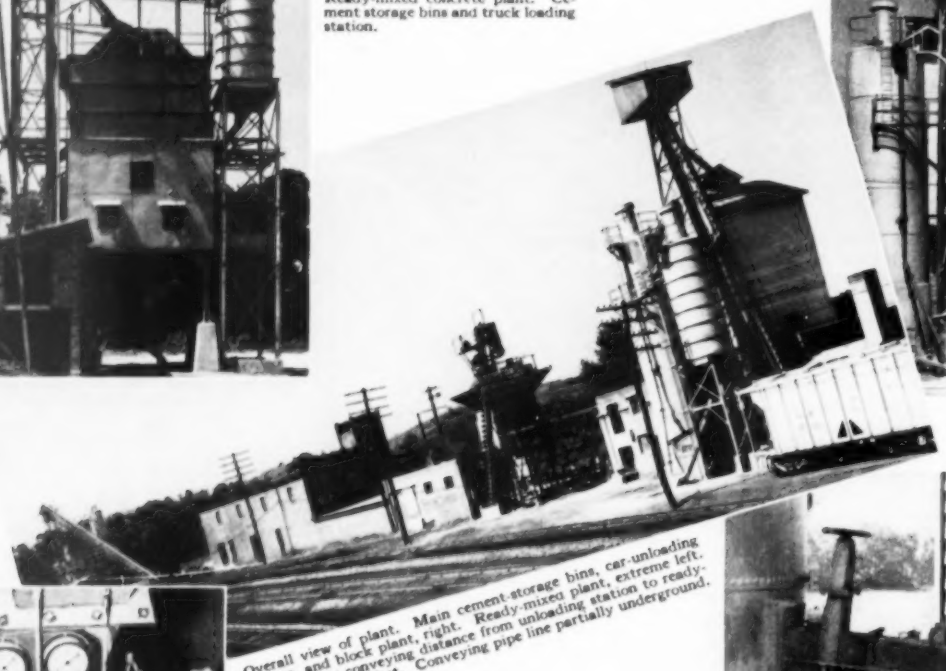


● This big machine at the Rees plant produces 900 standard blocks per hour—7,200 in an 8-hour day. Shown with the machine is William Smith, who has been with the firm for over 20 years.

Ready-mixed concrete plant. Cement storage bins and truck loading station.

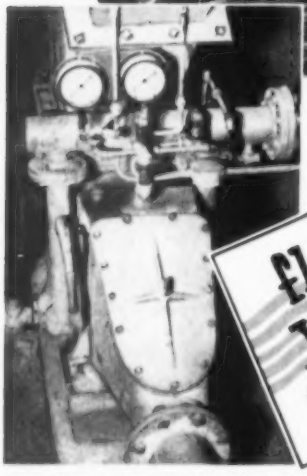
Main cement-storage bins, conveying line from Fuller-Kinyon Pump in pit underneath tracks.



Overall view of plant. Main cement-storage bins, car-unloading station, and block plant, right. Ready-mixed plant, extreme left. Approximate conveying distance from unloading station to ready-mixed plant, 700 feet. Conveying pipe line partially underground.

F-H Airslide for delivery of cement from storage bin to weigh scale over mixer in plant.



Fuller-Kinyon Pump in pit underneath tracks. Delivers cement to either main storage bins or to ready-mixed plant.

**flow your cement**

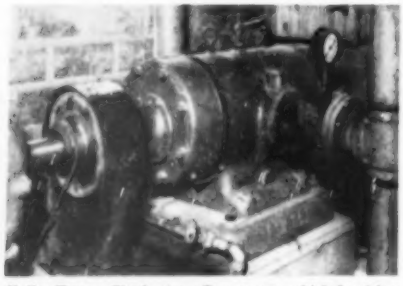
# *like Central Builders does with* Fuller-Kinyon System *and* F-H Airslides

Central Builders Supply Co., Sunbury, Pa., operating both block and ready-mixed plants at one location, represents one of the most efficient plant layouts in the East, due to its centralization of bulk-cement handling. This was made possible through the use of the Fuller-Kinyon Conveying System and F-H Airslides . . . safe, clean, economical distribution of cement used in the manufacture of its products.

Incoming cement, received in hopper-bottom cement cars, is delivered to a Fuller-Kinyon Stationary Pump located in a pit underneath the railroad tracks. From this point cement is elevated vertically, through dust-tight pipe lines, to two main storage bins, or by the use of a two-way valve in the conveying line, direct to the ready-mixed plant, a distance of approximately 700 feet. Cement can also be reclaimed from these storage bins and conveyed, by the same Pump, to the ready-mixed plant.

Reclaiming from the large bin is accomplished by using two individual Airslides. One Airslide conveys from an overflow cone, installed in the top section of the bin, to a weigh batcher in the block plant. The second Airslide, located in the bottom of the bin, delivers to the Pump, for conveying to the ready-mixed plant. Cement is spouted by gravity from the smaller bin to the Pump.

Fuller-Kinyon Systems and F-H Airslides have many advantages for the conveying of dry, pulverized materials. If you handle such materials it will be worth your while to learn about Fuller air-conveying systems. Write us today!



Fuller Rotary Single-stage Compressor which furnishes air for the Fuller-Kinyon System. Capacity 526 c.f.m., 28-lb. pressure.

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**DRY MATERIAL CONVEYING SYSTEMS AND COOLERS • • • COMPRESSORS AND VACUUM PUMPS • • • FEEDERS AND ASSOCIATED EQUIPMENT**

# Rx Ready Mix

By Harry F. Thomson

## Firemen Came to the Rescue!

A large central-mix concrete plant—one of a chain operated by a company in a metropolitan area—had an unusual setup for water supply. When the plant was installed, the only immediately available supply of water was from a 1½-in. city line which also served other industries in the neighborhood. The installation included an 8,000-gal. tank for storage of hot water for winter operation. Even when not being heated, all water entered the tank from the 1½-in. main. It was withdawn by an automatic electric pump, which discharged through a 2-in. line into a surge tank, from which it flowed into a weigh-tank for batching.

The plant personnel realized that with rapid batching, water would be withdrawn from the storage tank faster than the replacement flow from the small city line. There was conjecture as to whether the tank might be emptied completely, in which event the rate of batching would be limited to the rate of inflow through the tap into the 1½-in. main, at a reduced pressure because of the demands of the neighboring industries.

The day arrived when this did happen!

Shortly after noon on a day when unusually heavy deliveries of ready-mix were assigned to this plant, the dispatcher's telephoned the company's central office that the rate of loading trucks had been slowed severely, due to reduced water supply. There was immediate "master minding" as to what orders could be transferred to other yards; but little relief could be obtained because of absence at other points of trucks necessary to handle such reassignments.

During the discussion of steps to continue servicing all jobs, the suggestion was offered that the fire department be requested to pump water from the nearest hydrant into the large storage tank. An emissary was dispatched immediately to the city hall to ask the chief personally for such assistance.

But the joker appeared a few minutes after the emissary had left, when the dispatcher again telephoned that the emergency had passed—a heavy shower had occurred in their area, many suspensions or cancellations were coming in, and the reduced deliveries could be handled without assistance!

A little later a fire department pumper arrived at the plant; the firemen ran about 500 ft. of hose, including crossing a major thoroughfare, and pumped the storage tank full. By that time the rain had stopped, orders were reinstated, and the plant finished the day with a record output of concrete.

The next day the installation of an auxiliary storage tank was started as insurance against the recurrence of a water shortage. But the firemen had performed according to tradition, by coming to the aid of ready-mix production on that memorable day!

### National Slag Ltd. Begins Work on $1,000,000 Plant

At Hamilton, Ontario, contracts are being awarded for the construction of the $1,000,000 plant which National Slag Limited is erecting. Work will begin immediately.

Various types of building blocks will be produced from slag obtained from the Steel Company of Canada. For the last few years the slag has been used by Stelco as a foundation for their new docks.

National Slag Limited is owned jointly by Canada Crushed and Cut Stone, Ltd., Hamilton, Standard Paving and Materials Limited, Toronto, and the Buffalo Slag Company, Inc., Buffalo, N. Y.

### Phoenix Pipe Concern Moves To Larger Plant for Expansion

Concrete Conduit Company has moved to a larger manufacturing site at 4242 Buckeye St., Phoenix, Ariz.

The firm erected on a 40-acre tract an office building, plant facilities for the manufacture and steam-curing of concrete pipe, a shop and storeroom building, and storage space for finished pipe.

Production capacity of the new plant is 3,000 ft. of pipe daily, according to W. C. Harford, manager. Company products include irrigation pipe, headgates, sewer pipe, storm drains, culverts, and steel-reinforced centrifugal pipe for use in water and sewer mains.

The company's original Phoenix plant was established in 1943 on a 10-acre site with 28 employees. It has grown steadily since, and now up to 150 men are employed during peak manufacturing periods.

Officials of the firm, in addition to Mr. Harford, are H. R. Cooper, assistant manager in charge of production; Ted Schmidt, irrigation pipe sales manager; Charles Scruggs, office manager; Everett Parks, field superintendent, and Carl McPherson, engineer.

### Minnesota Perlite to Make Castlite Roof Tile Slabs

Precast Slab & Tile Company, St. Louis, has appointed Minnesota Perlite Corporation an exclusive franchisee for the manufacture of Castlite Insulating Roof Tile, according to J. John Brouk, president of the licensing firm.

Castlite is the trade-name for a lightweight Permalite Alexite (perlite) slab measuring 2⅝ by 24 by 48 in. Weighing only 8 lb. per sq. ft., the tile combines lightness, insulation, fireproofing, acoustical qualities, strength, and nailing properties. The slabs are made under an exclusive process utilizing Permalite Alexite ore, mined at Rosita, Colo., by the Great Lakes Carbon Corporation.

### New Cubing-Dating System Insures Properly Cured Units

General Concrete Products, Inc., Van Nuys, Calif., has devised a method of cubing and date-stamping block to help satisfy moisture-limitation requirements. Cubing of the block allows better circulation of air during 28-day atmospheric curing at the plant and lowers moisture content at the time of shipping. The date of block manufacture is stamped on each cube after one day's curing and is visible when loading and also on the job. The manner of stacking insures that the trucker will load only blocks that are properly aged.

The company has long felt that the use of properly cured and aged block would greatly increase the demand for concrete block construction.

### Small Business to Get Aid In Reducing Plant Mishaps

Small business, which plays a big part in our national economy, soon will get more help in reducing employee accidents. Ned H. Dearborn, president of the National Safety Council, made that promise in announcing plans for an intensified attack on accidents in small firms through the expansion of the Council's Small Business Program.

The stepped-up program, which was put on a full-time basis in July, 1951, has been made possible by an additional annual grant from the National Association of Mutual Casualty Companies of $11,200, which raises the association's total annual contribution in support of this work to $23,700. The added funds will provide increased consultation service for trade associations, local safety councils and business groups which reach small firms.

A. M. Baltzer, director of the Council's small business program, points out that more than 90 percent of all businesses have fewer than 100 employees, and that these workers make up 4 percent of the nation's labor force. Yet studies show that these small companies have injury rates these small companies have higher injury rates than large companies.

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E. D. Conklin & Son has completed construction of a ready-mix concrete plant in Richfield Springs, N. Y. It is one of the few of its type to be built in a rural area.

# CANADIAN NEWS LETTER

INTEREST in prestressed concrete continues to run high in Canada. Following the formation of the Prestressed Concrete Development Group in Toronto in September, a Canadian Conference on Prestressed Concrete, the first of its kind, has been announced, to be held in Hart House Theatre, University of Toronto, January 28 and 29, 1954.

The conference is intended as "a precise review of prestressed concrete for Canadian engineers, architects and builders".

Serving as sponsor is the Extension Department of the University of Toronto, with support of other interested bodies. Professor C. F. Morrison, Department of Civil Engineering, University of Toronto, is chairman of the conference.

The speakers, all experts in their fields, are expected to emphasize especially those points dealing with applicability of prestressed concrete to Canadian construction, which presents some differences from European use.

Among the speakers are R. F. Shaw, vice-president of the Foundation Company of Canada; A. T. Waidelich, vice-president and manager of research, the Austin Company, Cleveland, Ohio; R. B. Young, past president, American Concrete Institute; Professor G. Magnel, member of the Royal Belgian Academy, and professor of reinforced concrete at the University of Ghent, Belgium; and A. L. Parme, Portland Cement Association, Chicago.

On the day following the convention, Robert Shama, managing director and chief engineer, Empresas Campenon Bernard de Venezuela, will present a talk on prestressed concrete arch bridges in Venezuela to a joint meeting of the Royal Canadian Institute and the Toronto Branch of the Engineering Institute of Canada, at the University.

AN important step in standardization of names of concrete products in Canada was taken recently when the directors of the National Concrete Products Association drew up a list of standard names for their products, to be adopted by members of the association when referring to their products.

In addition, a copy of the nomenclature will be sent to the National Concrete Masonry Association with a suggestion that they adopt it to set up an international standard.

Copies of the recommendations will be printed and distributed among those connected with the industry.

A display of concrete products machinery which is expected to be one of the largest ever held in Canada will be on view at the annual meeting of the National Concrete Products Association at Niagara Falls, Ont., on January 25 and 26, 1954.

Space for 14 exhibits is available at the convention headquarters, the Sheraton-Brock Hotel. Exhibits are held on alternate years by the N.C.P.A. and the N.C.M.A. in the United States.

The floor of the display room will support any load limit. Copies of the floor plans will be sent to prospective exhibitors by the N.C.P.A. in the near future.

One of the principal speakers at the convention will be Robert Saunders, chairman of the Hydro Electric Power Commission of Ontario. His address will be followed by a guided tour of the Hydro development at Niagara Falls.

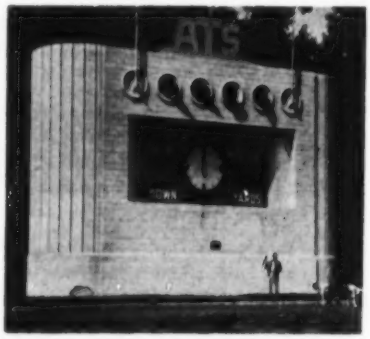
AT Villeneuve, Que., the St. Lawrence Cement Company will go into production in 1954 at its $11,000,000 plant, now under construction. Capacity of the new works will be 6,000,000 bags annually. The plant is being built by a staff of 30 from Holderbank, a Swiss concern, but the St. Lawrence Portland Cement Company is a Canadian firm.

## Inexpensive Precast Arches Cut Cost of Construction

A novel technique using inexpensive pre-cast concrete arches to span 50-ft. warehouses has been developed by C. Lyman Ellis & Co., Harlingen, Tex., according to *Architectural Forum*.

Costing only $1.40 per square ft., the arches are joined together with crossed tie rods of 1-in. steel to reinforce the roof. The new system should prove useful for factories, schools, supermarkets, or other one-story buildings requiring durable fireproof roofs. Spans can be made up to 100 ft. in width.

A new concrete block plant has been established at Pelham, Ga., on the Dixie Highway in the northern part of the city. J. R. Hancock, formerly of Albany, Ga., is owner and operator.



• The latest in scoreboards—an imposing structure of Haydite block at the football field of the Arsenal Technical High School in Indianapolis, Ind. The Spickelmier Co. of Indianapolis supplied the units. The figures of the men show the size of the huge "board". Fran Schroeder & Associates were the architects; the contractor was T. A. Berling & Sons.

The advertisement on the right hand page, addressed to architects and engineers, appears in Architectural Record, Engineering News-Record, Western Construction and Southwest Builder.

***The most important 12 square inches on your Truck Mixer . . .***

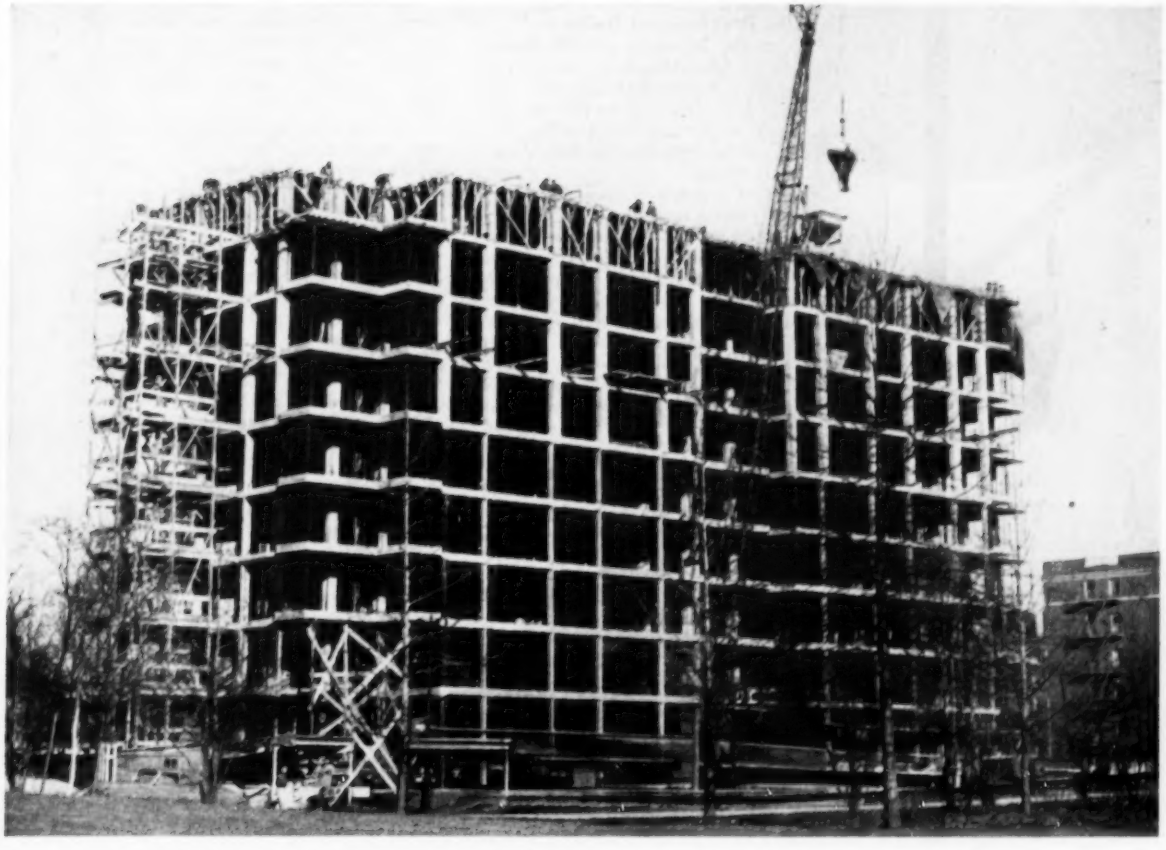
is the Rating Plate which certifies to engineers and architects that the machine meets quality standards. Insist on this Rating Plate. It assures you of approved equipment that is safe from obsolescence. It maintains the high standards on which the continued success of the ready-mixed concrete industry depends.

The usefulness of the plate slab, in present day construction, seems limitless. By designing this fashionable apartment building with 7½″ slab floors, the architects were able to: (1) encase all plumbing and utilities, (2) cantilever balconies 6′4″ beyond the building line, (3) soundproof all rooms, (4) eliminate ceiling beams, (5) dispense with plaster on ceilings, (6) save height in each story, (7) save costly formwork.

The builders needed only one set of forms to go up the 12 stories, pouring about one-third of a floor area at a time, straight through the winter.

Pouring schedules and strength specifications (3000 psi, increased to 3600 in cold weather) were most satisfactorily met with ready-mixed concrete, processed in truck mixers *certified* to have the correct design, capacity, mixing speed, mixing action and water control to insure a homogeneous material of uniform predetermined strength.

# the things you can do with a slab



**Look for this Badge of Dependability on Truck Mixers:**

4½ CUBIC YARD MIXER
GUARANTEED TO HOLD, MIX AND AGITATE ITS RATED CAPACITIES AND CERTIFIED TO COMPLY WITH TRUCK MIXER MANUFACTURERS BUREAU STANDARDS AS APPROVED BY N.R.M.C.A.
6½ CUBIC YARD AGITATOR

You have a right to insist on this Rating Plate on any truck mixer that serves your jobs. It is available to all who comply with the quality standards which have been established by the Truck Mixer Manufacturers Bureau and approved by the National Ready Mixed Concrete Association.

***These member manufacturers comply with Bureau standards:***

**Blaw-Knox Division**
Pittsburgh, Pa.

**Chain Belt Company**
Milwaukee, Wis.

**Concete Transport Mixer Co.**
St. Louis, Mo.

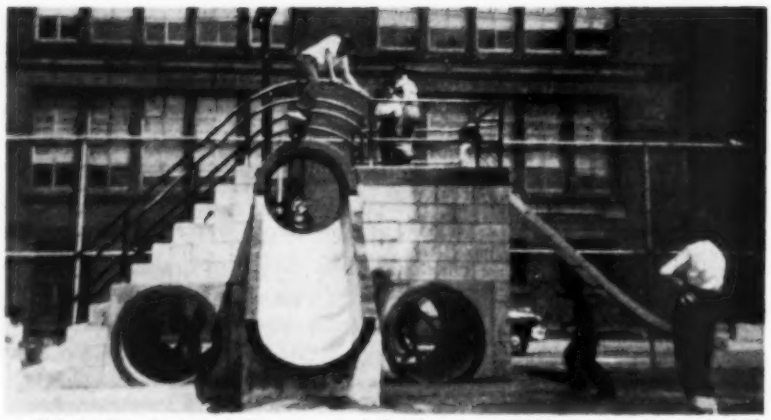
**Construction Machinery Co.**
Waterloo, Iowa

**The Jaeger Machine Co.**
Columbus, Ohio

**The T. L. Smith Co.**
Milwaukee, Wis.

**Worthington Corporation**
Plainfield, N. J.

● The man with the spyglass is having a hard time seeing the top.



● Philadelphia playground directors noted that kids love to hide out in pipes and climb around in structures; so they installed this popular "fort" of concrete units and pipe at 13th and Wharton streets. The idea also seems like good, basic promotion for concrete products firms, since it could indoctrinate a new generation of future home-builders. Universal Concrete Pipe Company supplied the pipe; Aversa Construction Company handled the construction.

## North Carolina R.M.C. Firm To Add Prestressed Units

One of the industries recently established in the Charlotte, N. C., area is the operation of Concrete Materials, Inc. This firm delivers ready-mix in its fleet of nine transit-mix trucks and also handles concrete materials. Operators are Pete Verna and R. O. Evans.

The plant is presently equipped with a 3-cu. yd. central mixer; but it is so designed that a 6-cu. yd. tilting unit can be added later. Other items of equipment include a 2,000-bbl. three-compartment cement silo; a 500-ton, eight-compartment overhead aggregate bin; a 250-ft. tunnel belt-conveyor connected with a 275-ft. inclined belt conveyor; and a 36-ft. cement screw which will unload 250 bbl. per hour. All controls are automatic. The plant also has a 1,200-ft. railroad siding and a 250-ft. trestle for gravity unloading.

It was indicated that the company will soon build a prestressed concrete products plant in which roof slabs, beams, girders, bridges, joists, and other related items will be made. A 50-ft. overhead crane, which can be extended over the side tracks, will handle the prestressed products. High-volume production will be facilitated by 160-ft. casting beds.

## New Concrete Products Plants Reported in Many Sections

Abundant testimony to the increasing popularity of concrete masonry units and other products is noted in the new operations constantly being reported. Here are a few examples, culled from Midwestern and Western areas and the Pacific Northwest.

At Rexburg, Idaho, the Valley Block Company is turning out between 2,000 and 3,000 standard cinder block per day and Roman block in all colors, as well. This company started production even before the plant was completed!

Mandan, N. D., now has a Haydite block plant, that of Val Helbling. His products contain an expanded shale aggregate, Molite, made right in Mandan by Molite, Inc.

The Beloit (Kans.) Concrete Products Company makes various units and ready-mix, as well. Operations were started in a plant formerly housing the Beloit Block plant. Operators are the Millers—Guy and his son, Joy.

Not long ago one of the youngest industries of Bedford, Ind., filled its third bridge order and announced the start of work on its fourth. This new concern is the Indiana Prestressed Concrete Company, Inc. Lansing Byers is foreman, and Phil Balcomb is general manager. Its executives are the same as those of the Indiana Limestone Company, since it is a subsidiary of I.L.C.

A new concrete pipe operation is that of the Utah Concrete Pipe Company at Salt Lake City. The firm also has a plant in Ogden, Utah. At the new facilities production is maintained at the rate of 400 ft. of concrete pipe per day by the Cen-Vi-Ro centrifugal spinning process. Last summer the company filled an order with the city for 18,000 ft. of pipe for a new water line.

The Midwest Prestressed Concrete Company, Springfield, Ill., recently began producing especially-fabricated concrete beams for the construction of highway bridges. Midwest has a franchise for the manufacture and sale of the beams, which have been developed through a series of engineering processes perfected by the Concrete Products Company of America, whose headquarters are in Philadelphia. Officers of the company include the following: W. A. Russell, president; Don F. Childs, G. M. Neff, and J. F. Stephan, vice-presidents; W. A. Neff, treasurer; and Jacob O. Whitlock, secretary and general manager.

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Spokesmen for the Bethany Falls Transit Mix Concrete Company have announced that the firm will build a $10,000 addition to the plant at Cameron, Mo. The new section will include a 60-ft. tank with hopper and scales. Bethany Falls Transit Mix makes both concrete and Haydite block, in addition to ready-mix.

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John A. Kuiken

John A. Kuiken, Supt.
Concrete Products Plant

JAK/hm

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# Types Of Portland Cement — Their Characteristics And Uses

Originally presented at the 1953 Short Course of instruction sponsored by the American Concrete Pipe Association in Chicago in September, this address is reproduced by permission of A.C.P.A. and the Portland Cement Association.—The Editors

By WILLIAM LERCH

**Introduction** Prior to 1930 the A.S.T.M. Specifications for Portland Cement described one all-purpose cement. With the rapid increase in the use of portland cement concrete after the first World War, there was a demand for higher early-strength concrete. This led to a progressive increase in the strength of normal portland cement and the eventual adoption in 1930 of a specification for high-early-strength portland cement. The further continued increasing use of concrete and its use in new applications and under new conditions of exposure eventually led to the adoption of specifications for five types of portland cement and specifications for air-entraining portland cements.

About 1930 several governmental agencies, the Tennessee Valley Authority, the Bureau of Reclamation, and the U. S. Corps of Engineers, started plans for the construction of a number of large dams—larger than any that had been constructed prior to that time. This initiated an intensive study of methods for reducing the temperature rise and subsequent cracking in mass concrete structures and led to specifications for cements of moderate and low heats of hydration.

Water from some of these large dams was to be transported long distances through concrete pipes or concrete-lined tunnels and concrete-lined canals and ditches, to be used for city water supply and irrigation purposes. In some areas, particularly in the Western states, it was necessary to place these concrete pipes and concrete-lined canals and ditches in soils containing sulphates (sodium, potassium, and calcium sulphate) that were known by previous experience to have an aggressive destructive action on concrete. Studies were initiated to devise means for improving the sulphate resistance of portland cement concrete. These studies led to the adoption of specifications for special cements for use in construction where moderate and high sulphate resistance was required. They also led to a recommended practice of using high-quality concrete of low water-cement ratio, where sulphate resistance was required.

William Lerch, Research and Development Division, Portland Cement Assn.

**Five Types of Portland Cement** The A.S.T.M. adopted a specification for five types of portland cement in 1941. These specifications describe the conditions of use for each of the five types of cement, as follows:

*Type I:* For use in general concrete construction when the special properties specified for Types II, III, IV, and V are not required.

*Type II:* For use in general concrete construction exposed to moderate sulphate action, or where moderate heat of hydration is required.

*Type III:* For use when high-early-strength is required.

*Type IV:* For use when a low heat of hydration is required.

*Type V:* For use when high sulphate resistance is required.

The chemical limitations set forth in these specifications provide the special properties required for the various conditions of use. Table 1 shows the significant composition requirements of the five types of cement, A.S.T.M. C150-53.

The complete specifications contain additional limits on other oxides.

The calcium silicates are the major components (70 to 80 percent), and they are the principal strength-producing compounds in portland cement. The $3CaO{\cdot}SiO_2$ hydrates rapidly and provides high strengths at early ages. The $2CaO{\cdot}SiO_2$ hydrates more slowly and contributes to the strength at later ages. The Type I and III cements do not contain any limitation on the calcium silicates. Type III, the high-early-strength cement, usually contains a higher percentage of $3CaO{\cdot}SiO_2$ than any of the other types, and it is ground finer. Fine grinding accelerates the hydration and increases the strengths at early ages.

Extensive research has demonstrated that when concrete is exposed to sulphate waters, chemical reactions occur that cause expansion and deterioration of the concrete. The principal chemical reaction that causes the expansion and deterioration is a reaction of the $3CaO{\cdot}Al_2O_3$ in the cement with sulphate waters to form calcium sulpho-aluminates in the concrete. This chemical reaction is accompanied by an increase in the volume of solids within the concrete and results in an expansion, cracking and deterioration. That is the basis for the maximum limit on the $3CaO{\cdot}Al_2O_3$ content of Types II and V cements for use when sulphate resistance is required. Laboratory tests and service records have demonstrated that good quality concrete, with a low water-cement ratio, made with cements of low $3CaO{\cdot}Al_2O_3$ content has given good performance when exposed to sulphate waters.

Heat is liberated as portland

Table 1—Significant Composition Requirements of Portland Cements

| | TYPE I | TYPE II | TYPE III | TYPE IV | TYPE V |
|---|---|---|---|---|---|
| $3CaO.SiO_2$, Max. % | — | 50 | — | 35 | 50 |
| $2CaO.SiO_2$, Min. % | — | — | — | 40 | — |
| $3CaO.Al_2O_3$, Max. % | — | 8 | 15 | 7 | 5 |
| MgO, Max. % | 5.0 | 5.0 | 5.0 | 5.0 | 4.0 |
| $CaSO_4$ in hydrated mortar at 24 ± ¼ hr. as $SO_3$, g/L | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 |

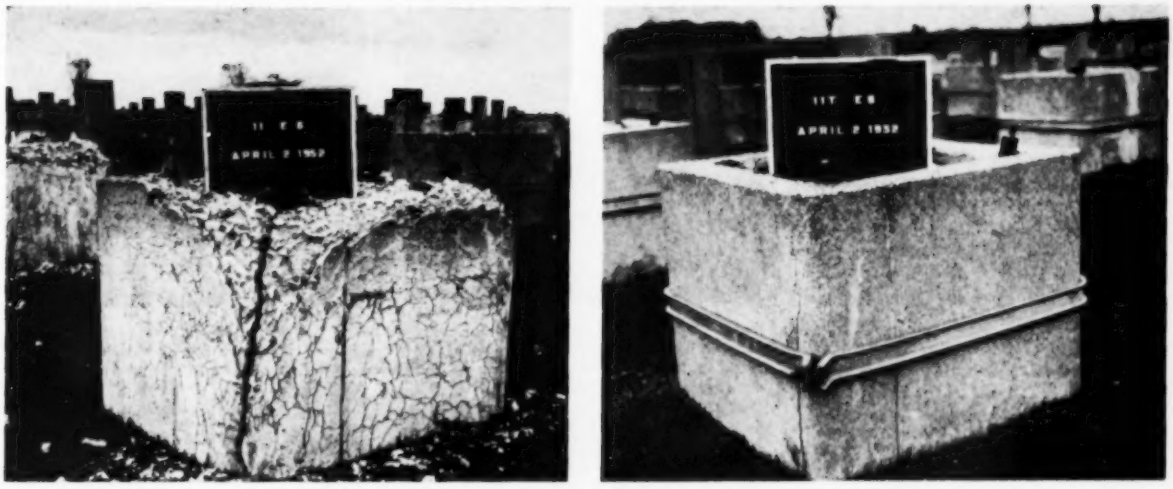



**Fig. 1. Box on the right shows the benefit of air-entrained concrete in resisting severe weathering. Except for the air entrainment, the two boxes were similarly constructed. Both were made with a lean mix of high slump.**

cement hydrates. In large mass construction, such as that used in large concrete dams, the heat liberated raises the temperature of the concrete. As the surface of the dam cools, while the interior of the mass remains at elevated temperatures, the surface contracts, and cracks are likely to occur. The $3CaO{\cdot}Al_2O_3$ and $3CaO{\cdot}SiO_2$ liberate the largest amount of heat during hydration. That is why there is a maximum limit on these compounds for Types II and IV cements for use when moderate or low heat of hydration is required.

Gypsum is interground with portland cement clinker to regulate the time of setting and the hydration at early ages. Excessive additions of gypsum can cause abnormal expansion. The specifications contain a maximum limit on the amount of gypsum that can be incorporated in the cement. Prior to 1953 the maximum quantity of gypsum that could be used was limited by placing a maximum limit on the $SO_3$ content of the cement. Recent studies have shown that the quantity of gypsum required to produce the highest strength and the least contraction will vary depending on the composition and fineness. In 1953 the A.S.T.M. adopted a new procedure for determining the maximum gypsum content of portland cement. It consists of placing a maximum limit on the calcium sulphate ($CaSO_4$) in hydrated portland cement mortar, at $24 \pm \frac{1}{4}$ hr., expressed as $SO_3$, grams per liter, maximum 0.50. This method of limitation permits the use of the proper quantity of gypsum required to produce the best cement and it also prevents the use of an excessive quantity that could cause abnormal expansion.

Excessive quantities of magnesium oxide, MgO, sometimes cause a delayed abnormal expansion and cracking. For that reason the specifications contain a maximum limit on MgO content of portland cement. The specifications also contain a maximum limit on expansion in the autoclave test for soundness as a further safeguard against abnormal expansion in concrete.

**Air-Entraining Portland Cements** Air-entrained concrete can be produced by the use of air-entraining portland cements or by adding an air-entraining admixture at the mixer. Air-entraining cements are made by intergrinding a small amount of an air-entraining agent with the clinker. The A.S.T.M. Specifications C175-51T list three Types—IA, IIA, and IIIA—of air-entraining portland cements. The chemical limitations of the respective types are the same as those of their non-air-entraining counterparts in A.S.T.M. C150-53.

**Blast Furnace Slag and Portland-Pozzolan Cement** Portland-blast furnace slag cement is available in a limited area in the eastern part of the country. The product is described in A.S.T.M. Specification C205-51T. The physical requirements for the product are essentially the same as those for Types I and IA portland cement. It is being used in practically all types of concrete construction.

There is no A.S.T.M. specification for portland-pozzolan cement. The product has been made intermittently at a number of different plants. It has been made in some cases to meet the requirements for a particular project. It has not received wide general application.

**Cements for Use in Concrete Pipe** Concrete pipes are used in many different applications and under various conditions of exposure. In general, the selection of the type of cement to be used in the production of concrete pipe will depend on the requirements for strength, permeability, and sulphate resistance.

Type I or Type III cement should be suitable for use in all concrete pipe production where sulphate resistance is not involved. The quality of the concrete mixture determines the strength and permeability of the product. Concretes of low water-cement ratio provide high strength and a high degree of impermeability. Cement content and water-cement ratio are usually closely related. A low water-cement ratio is obtained with rich mixtures. Proper grading of the aggregates is a further aid in obtaining a low water-cement ratio. Good quality concrete made with Type I cement, followed by proper curing, will produce concrete pipe of high strength and low permeability. It may be desirable to use Type III cement under certain conditions of production, to reduce the curing period and provide more rapid delivery of the finished product.

When a requirement for sulphate resistance is involved, Type II or Type V cement and good quality concrete should be used. The A.S.T.M. Specification C150 recommends the use of Type II cement for concrete exposed to moderate sulphate action, and Type V cement when high sulphate resistance is required. The use of good quality concrete is just as essential as the use of Type II or Type V cement. Poor

quality concrete of high water-cement ratio, even though made with sulphate resistance cement, will not withstand the aggressive action of sulphate waters.

The rate at which the strength of concrete increases varies somewhat with the type of portland cement used. Concretes made with Type II and Type V cements have lower strengths at early ages than comparable concretes made with Type I cement. Table 2 gives the approximate values for the five types of cement with Type I portland cement used as the basis of comparison.

**Table 2—Approximate Relative Strengths of Concrete as Affected by Type of Cement**

| Type of Portland Cement | Compressive Strength—Percent of Strength of Type I Portland Cement Concrete | | |
|---|---|---|---|
| | 3 days | 28 days | 3 months |
| I | 100 | 100 | 100 |
| II | 80 | 85 | 100 |
| III | 190 | 130 | 115 |
| IV | 50 | 65 | 90 |
| V | 65 | 65 | 85 |

The requirement for sulphate-resistance concrete may arise from three different conditions, namely:

(1) When the concrete pipes are placed in soils containing sulphates and the exterior surface of the pipes are exposed to sulphate waters;

(2) When the concrete pipes are to carry industrial wastes, mine waters, or other waters that may contain sulphates;

(3) When sewer pipes are placed under conditions that facilitate the generation of hydrogen sulphide and its subsequent oxidation to sulphates.

Sulphate waters are somewhat acidic. The Type II and Type V cements are not more resistant to acid than Type I cement. Where acid conditions are encountered, provisions should be made to neutralize the acid, to prevent its formation in the case of sewage, or to provide a protective coating for the concrete.

Papers by George Edward Bessey and Frederick Measham Lea and by E. C. Higginson and O. J. Glantz have described the conditions of sulphate exposure where the different types of cement should be used. The paper by Bessey and Lea entitled *The Distribution of Sulphates in Clay Soils and Ground Waters** describes the condition of concretes buried or partly buried in soils containing various concentrations of water-soluble sulphates. On the basis of the condition of the concretes, they made the recommendations shown in Table 3 with respect to the quality of concrete and type of cement to be used in the production of concrete products to be exposed to water or soils containing various concentrations of soluble sulphates. It should be noted that these authors emphasize the importance of the quality of the concrete.

*Proc. Inst. Civil Eng., March, 1953, p. 139.

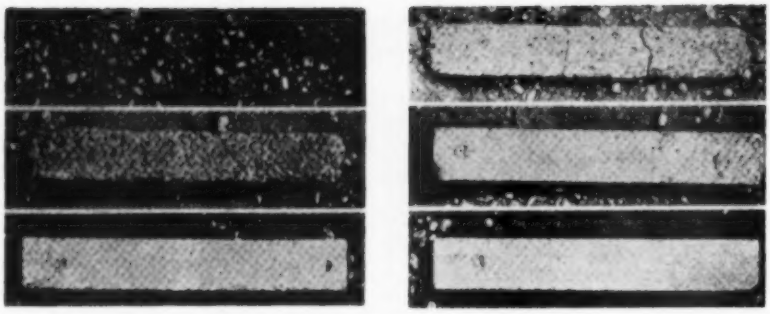


Fig. 2. Condition of Type II cement concrete beam specimens after 5 years' exposure to an alkali soil. The use of rich mixes and air entrainment improves sulphate resistance. Specimens to the left were of concrete without an air-entraining agent; those on the right with an air-entraining agent.

**Table 3—Sulphate Soil Conditions Affecting Concrete and Recommended Precautionary Measures for Precast Concrete—Bessey and Lea**

| Classification of Soil Conditions | | |
|---|---|---|
| Sulphur Trioxide in Ground Water; Parts $SO_3$ per 100,000 | Water-Soluble Sulphur Trioxide in Soil; Percentage of $SO_3$ in Air-Dry Soil | Precautionary Measures |
| Less than 30 | Less than 0.2 | No special measures |
| 0.2 to 0.5 | 30 to 100 | Rich portland cement concretes are not likely to suffer seriously except over a very long period of years<br>Alternate: The use of sulphate resistant cement |
| More than 100 | More than 0.5 | The densest portland cement concrete is not likely to suffer seriously over periods of 10 to 20 years unless conditions are very severe<br>Alternate. The use of sulphate resistant cement |

The recommended practices by Higginson and Glantz in a paper entitled *The Significance of Tests on Sulphate Resistance of Concrete*, presented at the A.S.T.M. 1953 Annual Meeting are shown in Table 4.

**Table 4—Type of Cement to be Used in Concrete Exposed to Water or Soil of Different Soluble Sulphate Content—Higginson and Glantz**

| Classification of Soil or Water | | |
|---|---|---|
| Sulphate Content of Water; $SO_4$ Parts per Million | Water-Soluble Sulphate in Soil; Percentage $SO_4$ in Air-Dry Soil | Type of Cement |
| Less than 150 | Less than 0.1 | No special requirement |
| 150 to 1000 | 0.1 to 0.2 | Type II cement |
| More than 1000 | More than 0.2 | Type V cement |

It will be noted that recommendations of Higginson and Glantz are more rigid than those of Bessey and Lea. Such differences of opinion are to be expected inasmuch as the quality of the concrete has a significant effect on sulphate resistance. Furthermore, the recommendations of Higginson and Glantz are intended to cover all types of concrete, while those of Bessey and Lea are for concrete products which they believe are of better quality than cast-in-place concrete.

**Air-Entrained Concrete** Air-entrained concrete was developed originally to improve the resistance to freezing and thawing and resistance to the surface scaling resulting from the application of salts for ice removal. It has served those purposes very well. Fig. 1 shows that air-entrainment improves the frost resistance of concrete exposed to weathering at Naperville, Ill. It has been found that air-entrained concrete has many other beneficial properties. They are: an increase in workability and cohesiveness, a reduction in segregation and bleeding tendency, lower permeability, and an increased resistance to the aggressive action of sulphate waters. Fig. 2 shows the effect of cement content and air-entrainment on sulphate resistance.

Air-entrained concrete is not suitable for use in the production of centrifugal spun pipe. Air-entrainment increases the formation of froth in that type of pipe production. The use of air-entrained concrete should have considerable merit in concrete pipe produced by other processes. A reduction in water-cement ratio can be obtained by the use of air entrainment. Concrete pipes are not often exposed to freezing and thawing. When the pipes are exposed to such severe weathering, air entrainment will improve the durability. The reduction in permeability and improved resistance to sulphate attack should amply justify the use of air-entrained concrete, whenever possible, in the production of concrete pipe.

(*Continued on page* 211)

# Fundamentals of Making High-Quality Concrete Masonry Units

*A paper presented at the 33rd National Concrete Masonry Association Convention in Cleveland.*

**By CEDRIC WILLSON**
Vice-President and Chief Engineer
Texas Industries

THE members of the concrete masonry industry have had more manufacturing information made available to them than any large business with which I am familiar. A vast file of technical data on this subject has been developed over the years, most of which the concrete masonry manufacturer can have for the asking. The N.C.M.A.; P.C.A.; A.C.I.; A.S.T.M.; the many fine trade journals; equipment manufacturers; cement and aggregate producers; and many other reliable sources of information on manufacturing technique and manufacturing problems have, between them, built up a most excellent library on the fundamentals of making high-quality masonry units. In addition, many of these organizations have field engineers and service men who, at no cost to the masonry manufacturer, will come into a plant and give generously of their time and knowledge. In view of these facts, we must admit that the producer of concrete masonry units has been uniquely blessed with a great deal of free or virtually free help, and certainly there is no excuse for anyone in this business not to be thoroughly conversant with the fundamentals and also the details of making a high-quality product.

What, then, is the reason or purpose in presenting this subject? Well, there is a familiar adage about the man who couldn't see the trees for the forest. I am quite certain that every producer knows the fundamentals of making high-quality masonry units; but often times a man gets too close to his business and gradually becomes careless without realizing it. A few bad habits develop, and quality starts to skid. So it is probably a fine thing for us to get together periodically and review the basic steps which most of us know are necessary in order to produce and maintain the production of high-grade concrete masonry.

Furthermore, there are concrete masonry manufacturers who are thoroughly familiar with these basic fundamentals but who make little or no effort to put them into practice in their plants. They are not sold on the advantages of producing high-quality units; they do not believe that rigid control of the various factors involved makes very much difference one way or the other. The way concrete masonry was produced 25 years ago is still good enough for them. So it is appropriate to consider the fundamental steps involved in high-quality concrete masonry production and, at the same time to make a case for putting these steps into practice or for continuing them, as the case may be.

Cedric Willson, vice-president and chief engineer, Texas Industries.

The manufacture of concrete masonry units naturally divides itself into three steps, including mixing the concrete, molding or machining the unit, and curing the unit. In my experience, the molding or machining operation occupied most of the time and attention of the average producer until a few years ago. It was thought that you could stir up concrete with almost any kind of aggregate that happened to be around; and generally the material of lowest cost was used without question. However, meticulous care was taken in selecting the machine, and hours were spent keeping it in proper adjustment. As soon as the blocks were on the racks, the manufacturing process was finished — in the minds of many producers. To be sure, there was an additional operation called curing that many good technical men were talking and writing about; but it was, more or less, an unnecessary nuisance, and probably the less said about it the better.

During the last 10 or 12 years there has been quite a revolution in our industry . . . It has gradually been recognized that all three steps are equally important; and without good practice in all three, high-quality concrete masonry units cannot be manufactured. Let those doubting Thomases remember the significant fact that the tremendous increase in the production and use of concrete masonry pretty well coincides with increased recognition and acceptance of high-quality practice in the industry. Of course, there were many other factors which were important contributors to this growth, but none can say that higher quality did not play an important part. In my opinion, we cannot rest on our oars. Our future growth will to a large extent depend on improving quality still further, not by a few manufacturers here and there, but by the industry at large.

Now before proceeding to a detailed discussion of each of the three steps, let me define high-quality concrete masonry units, so that it will be clear to all just what I am talking about. To me, a high-quality unit is one that complies with A.S.T.M. Specifications C-90, except that the moisture content shall not exceed 30 percent of total absorption, rather than 40 percent, as called for in the specifications. In addition, the texture and color of units from any plant should be uniform. This paper will be confined to units which meet these requirements.

*Step No. 1* is mixing the concrete. This first requires evaluating the available materials. It will be assumed that any cement available will comply with specifications. I suggest that the cement manufacturer be requested to furnish a typical mill test including a calculation of the compound composition. This may be valuable in formation to have in your files and will be supplied for the asking. Next

Aggregates are dampened by water spray (circle) before being stored in bins, thereby eliminating loss of fines, reducing segregation, and also effecting easier mix control.

it will be necessary to develop a dependable source of aggregate. Aggregate for concrete masonry is divided into two classes usually described as heavy and lightweight. I prefer that we class them as non-absorbent and absorbent aggregates, since their absorption is much more important to us than their weight in working out the mixing technique. Non-absorbent aggregates are usually a combination of sand with either pea gravel or crushed limestone. Occasionally some limestone screenings are added to the sand.

While economics require that the manufacturer use aggregate produced in the locality of his plant, there is usually some choice. This should be based on the ability of the supplier to furnish uniformly well-graded material from day to day and month to month. The importance of well graded and uniformly graded aggregate is important from the standpoint of economy as well as quality. It is obvious that a manufacturer cannot produce uniform masonry units with variable raw materials. Furthermore, if an amount of cement is used which will provide proper strength with poorly graded material, cement will be wasted in those batches which, by chance, are properly graded. Conversely, if the amount of cement is right for the well graded batches, low-strength blocks will be produced from the poor gradation.

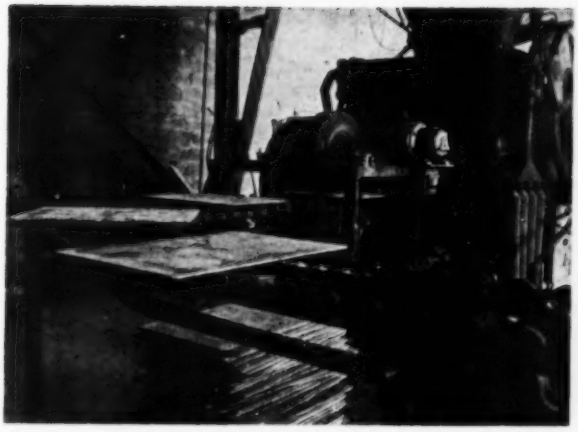
Well graded coarse aggregate will all pass a ⅜-in. screen with 25 to 40 percent passing the No. 4 and 0 to 5 percent passing the No. 8. Sand should grade uniformly from the No. 4 sieve to about 5 percent minus 100-mesh. It is unusual to find sharp concrete sand with enough minus 50-mesh material for an ideal concrete masonry sand. In many localities this deficiency can be made up by using a small amount of fine drift or "blow" sand. Stone screenings can also be used to build up the minus 50-mesh fraction of the sand. If possible, the sand should have 15 to 20 percent minus the 50-mesh sieve. In normally graded sand, the fineness modulus is a helpful yardstick, and I suggest a range of from about 2.60 to 3.00. If gravel is used for coarse aggregate, 30 to 45 percent combined with from 70 to 55 percent sand should work out well, the exact proportion depending on the texture desired and gradation. Fineness modulus of combined aggregate should be within the range of 3.50 to 4.00. If crushed stone is used, a wider range of combining proportions is possible, and 25 to 50 percent combined with from 75 to 50 percent of sand is recommended, depending on the texture desired.

This picture illustrates good mixing practice. The mixer is not overloaded. Water is accurately measured; also, the cement weigh batcher is equipped with an electric vibrator.

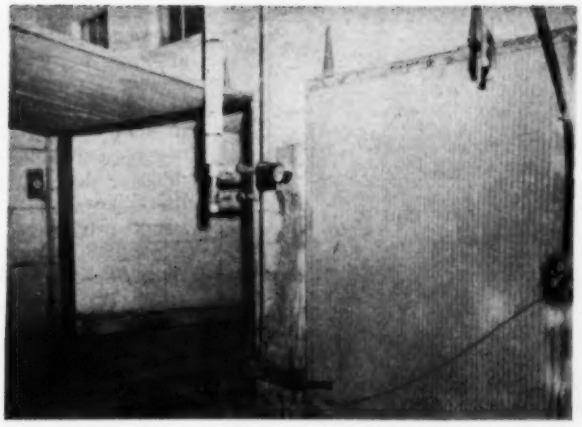
In working out a mix design for non-absorbent aggregates, the most economical is that proportion of fine to coarse which will give the greatest weight per cubic foot. This proportion should be determined, and the final mix should be kept as close to it as possible. However, this optimum combination may have to be modified because it is also necessary to produce a texture acceptable to the trade in your particular area. It is also necessary to obtain enough "green block strength," so that when units are stripped from the machine and put on the racks, they will stand up to proper dimensions, with their ends and webs not cracking. Trial batches will determine the proper mix which will best fit these requirements. The important thing is to develop the best possible mix from the local aggregate and then provide the simple controls necessary to keep it uniform, batch after batch, and day after day. This will usually give the lowest material cost and, at the same time, a uniform high-quality unit. The amount of cement required depends upon the type of machine, the curing methods, the aggregate and other factors; but a mix of 1:10 to 1:14 or about 9.5 to 7 lb. of cement per cu. ft. of aggregate should provide satisfactory strength.

In setting up the batch the moisture in the aggregate should be taken into account. The basic mix will be on the basis of moisture-free material. If the percentage of moisture is not determined and added to the basic weights, there will be a shortage of aggregate by the amount of moisture. This is costly in using an excess of cement and does not provide uniform concrete, batch after batch. A careful study of aggregate along these lines requires time, patience, and a little hard work. However, it will be an extremely profitable investment and will repay the manufacturer many times over in high-quality masonry units at minimum cost. Let no one be fooled on the aggregate cost per block. Many times the cheapest material on the basis of the cost per ton or per yard is the most expensive per unit when a thorough study is made.

In using a lightweight or absorbent aggregate, many of the factors discussed for non-absorbent aggregates also apply. The material used should be the best available, taking



Cleaning and oiling of pallets should be a matter of systematic routine. In this picture the pallets are cleaned by a steel brush and then oiled automatically.



Proper temperature and moisture conditions are important in curing. These steam curing rooms are equipped with insulated doors and automatic heat controls.

into account quality and cost. Good gradation and uniformity are extremely important. Uniformity includes weight per cubic foot, absorption, and crushing strength. When these properties vary over wide limits from time to time, it is very difficult to maintain the production of uniform and high-quality masonry units. In selecting a lightweight material, variations in properties as compared with cost are even more important than non-absorbent or heavy aggregates. Since the yield may vary from 50 to 80 8-in. equivalents per cu. yd. of aggregate, and the cement factor from 18 to 28 block per bag, it can be seen that the cost per yard or per ton means little in terms of material cost per unit unless performance is also taken into account. The absorption of these materials varies from 8 to 35 percent; and where there is a choice, this is important because generally speaking, the greater the absorption, the more difficult it is to develop uniform mix control. As would be expected, coal cinders and natural aggregates such as volcanic cinders and scoria are usually not as uniform as processed materials such as processed slag and expanded clay, shale, and slate. If at all possible, lightweight materials should be purchased as separate fine and coarse aggregate and mixed at the products plant the same as heavy aggregate.

Good gradation is just as important and for the same reasons—economy, uniformity, and quality. Coarse aggregate should all pass the ⅜-in. sieve with 25 to 35 percent passing the No. 4 and not over 10 percent passing No. 8. The fines should all pass the No. 4 with 50 to 60 percent passing the No. 16, 20 to 25 percent passing the No. 50, and 8 to 12 percent passing the No. 100. Depending on the desired texture, the development of proper "green block strength," and machining properties of the aggregate, 35 to 50 percent coarse aggregate should be mixed with 65 to 50 percent fine aggregate. When cinders are used, it is usually not practical to separate into fine and coarse fractions, and a ⅜-in. to zero blend with a fineness modulus of about 4.00 is recommended. There should be 10 to 15 percent minus the No. 50 sieve, and 5 to 8 percent minus the No. 100.

In order to produce high-quality masonry units, it is necessary that all lightweight materials, regardless of type, be reasonably free from lime, fine particles of iron, and other deleterious matter that will cause popping and/or staining. With some lightweight aggregates, it may be desirable to add a small amount of heavy sand. This should be held to the minimum necessary to develop required strength and machining properties. In setting up the lightweight batch, moisture in the aggregate must be taken into account; and due to high absorption values, it is even more important than for heavy aggregates. In order to maintain uniform concrete, it may be necessary to run the moisture in the aggregate several times daily and adjust the batch weights accordingly. It is difficult to recommend a cement factor for lightweight concrete because of the many different types of material. Basic mixes will vary from 1:5 to 1:10 by volume on a dry material basis; and this must be worked out by trial for each material based on the recommendations of the aggregate producer. As with heavy materials, the most important thing to insure high-quality production is to develop the best possible mix for the material being used, and then provide the controls necessary to keep it uniform, batch after batch.

In handling any aggregate in storage and from storage to mixer, segre-

Many plants have built covered storage facilities in recent years, which are extremely valuable especially during periods of bad weather.

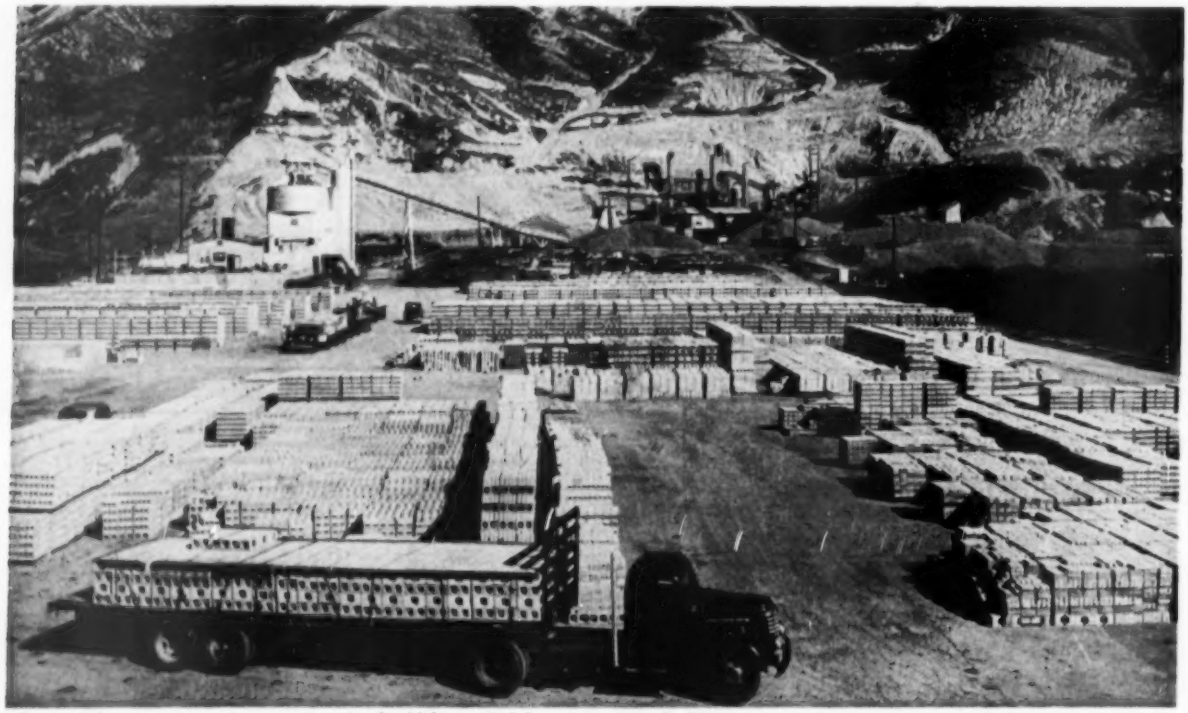
With a hydraulic testing unit, masonry units can be checked regularly for compressive strength.

gation is a problem. The efforts of the aggregate producer to ship uniform material will be wasted if segregation develops in charging the mixer. Furthermore, the problem of uniform mix control will be made difficult if not impossible. Segregation can probably never be completely eliminated, but it can be minimized by keeping bins as full as possible, with a balance between incoming and outgoing material. Conveyor belts or elevators should discharge in the center of the bin. Damp aggregates do not segregate as easily as dry material, and both sand and all absorbent lightweight material should go into the storage bin dampened. Sand is generally damp, anyway; so ordinarily it does not present a problem. The absorption of lightweight material varies over such wide limits that no definite percentage can be given, but it is very desirable for them to contain about half their total absorption. This would range from 4 or 5 percent for expanded shale to 15 percent or more for some of the more absorbent materials.

Some lightweight aggregate producers can pre-wet material at their plants, a practice that is highly recommended. The additional freight is money well spent in eliminating segregation and loss of time. This practice also makes for easier mix control.

In mixing it is important not to overload. The manufacturer's rating on a mixer is usually maximum and should never be exceeded. As a matter of fact, better concrete will be produced with a smaller charge. From 46 to 48 cu. ft. in a 50-ft. mixer is recommended. The ideal time to introduce cement is when the aggregate is in a saturated, surface-dry condition. This is seldom, if ever, achieved in actual operations, but it should be approached as nearly as possible. With sand and gravel, cement can be introduced at once and thoroughly mixed for about 4 minutes before the water is added. If crushed stone is used, it should be put in first with substantially all the water required and mixed for about 2 minutes. Then sand and cement can be added. With all absorbent materials, the aggregate and approximately 75 percent of the total water to be added should be put in the mixer and mixed for at least 3 minutes. Then cement can be added, and after it has been thoroughly dispersed, the balance of the water can be added. These steps should always be timed. No mixer man is able to guess anywhere near right, batch after batch. The total mixing time should be as long as possible, depending on the requirements of the machine. Minimum time for good concrete is, I believe, about 7 minutes. If molds are on the machine which take concrete at a rate which does not permit a 7-min. mix, the machine should be slowed down. It will pay you back in quality. In addition, the water added at the mixer should be measured. A calibrated tank or meter installation will be a big help to any mixer man in making batches of uniform consistency. Once the moisture in the aggregate is determined and the amount of added water is known, the same conditions usually hold for several hours or perhaps all day, and the same amount should be added for each batch.

*The second step, machining the unit,* is a matter of keeping the machine in adjustment and checking the units for proper dimensions as



After initial curing, concrete masonry units should be yarded from 2 to 4 weeks (depending upon weather conditions) for final curing.

they are stripped. Proper mechanical maintenance, discarding worn mold boxes, keeping pallets clean, and other obvious steps necessary for efficient operation, should be a matter of systematic routine. Modern machines have been designed by skilled and experienced mechanical engineers and have been built to stand rugged hard use. Given the proper feed, their operation is no longer a major problem, and if they are maintained in good operating condition, they will do their part in producing high-quality masonry units.

*For the third step, curing,* moist air, high temperature and moisture at atmospheric pressure, or heat and high pressures up to 150 p.s.i. can be used. I believe a high-quality unit can be produced by any of these methods, provided that good practice is followed. The purpose of curing is to permit the concrete to develop a substantial part of its ultimate strength, to let the drying or curing shrinkage take place so the unit is stable in volume, and to bring the moisture down to 30 percent or less of total absorption.

Because curing under normal atmosphere requires a considerable length of time and is dependent upon weather conditions, this method is not practical for a plant with even moderate production. The necessary curing action can be accelerated by moisture and heat, and probably most producers today are doing this by placing blocks in insulated steam kilns and providing moisture and temperatures of 150 to 180 deg. F. with low-pressure steam during a cycle of from 8 to 16 hr.

I believe there are two very important steps which must be controlled in operating this cycle. First, the holding time after the room is filled must be adequate and uniform. Second, the rate of temperature rise must be controlled. The quality of the unit can be determined in the steam room regardless of the degree of efficiency attained in the other two manufacturing steps. Uniformity of color, strength, and texture are affected.

The holding time should be 1½ to 2 hours for lightweight units and at least 2 hours for heavy units. In the North in winter, an additional ½ to 1 hour is desirable. Also in cold weather the room should be kept warm by bleeding a little steam into it.

After the holding period steam should be turned on and controlled so that the temperature will not rise at a greater rate than 50 deg. F. per hour. It should be taken up to 150 or 160 deg. F. for heavy units and to 180 deg. F. for lightweight units. After maximum temperature has been reached, the steam should be shut off and the units allowed to soak for at least 8 hours. It is important to operate a proper steam room cycle and equally important that the selected cycle be maintained uniformly for each room, day after day. Extended long-stem thermometers, if conscientiously used, will provide fair control. Automatic controls can be installed for a few hundred dollars and are recommended as a valuable aid in producing uniform, high-quality masonry units.

Following this steam cycle the block, if at all possible, should be yarded from 2 to 4 weeks, depending upon weather conditions. Then, under normal atmospheric conditions, the block will be reasonably stable in volume, will have a moisture content below 30 percent, and will be ready to go out to the trade. Many plants have built covered storage for all or a part of their inventory during the last few years, and this facility can be extremely valuable to the quality producer during periods of bad weather.

Under certain conditions of production and demand, it may be necessary to dry the units artificially with a hot-air system in order to accelerate curing and reduction of moisture content. In using hot-air drying, temperatures should not be carried over 212 deg. F., in order that there will be no loss of chemically combined water. A too rapid movement of dry air can also cause the unit to dry so rapidly that a hard brittle shell develops on the outside, which prevents interior moisture from escaping. The interior structure is still damp, and little or no effective curing has taken place. This is particularly true with high-absorbent lightweight aggregates.

To summarize—I believe that the key to high-quality concrete masonry manufacture is control, which will assure uniformity once the efficient uses of the materials and equipment available has been established. In the second step (molding) the block machine goes through a cycle which is the same every time. No one in the business of producing concrete masonry would consider for a minute, the purchase of a machine which was erratic in performance. Certainly it is equally important that mixing the concrete and curing the units should also be uniform. If the concrete is erratic and varies from batch to batch and the curing cycle is not uniform and is allowed to become a hit-or-miss operation, the exact and uniform performance of the machine is wasted. The machine cannot be expected to compensate for the lack of uniformity and control of mixing and curing.

The fundamentals of making high-quality concrete masonry units are as follows:

(1) Efficient use of the aggregate available to produce high-quality concrete
(2) Proper adjustment and maintenance of the block-making machine
(3) An adequate curing cycle which will provide the strength and volume stability necessary for a high-quality unit
(4) Effective control, permitting uniform operation of the three steps above.

In my opinion, the last step is fully as important as the other three, and a uniform operation day after day and month after month is necessary in order to produce high-quality products with economy. Control enables the producer to know in advance the properties his concrete masonry units will have, and their quality will not be a matter of chance. In a large majority of products plants this type of operation not only assures quality, but also produces a lower cost unit. It is certainly not intelligent operating on the part of any member of this industry to pay a premium for inferior quality. Let us team up low-cost and high-quality concrete masonry units. In a well-operated plant, they generally go together.

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## R.M.C. Plants Announced In South, West, Midwest

A "sampling" of new ready-mix operations yields plants in three widely-separated locations. At West Point, Miss., the Building Service Company recently announced the opening of its new facilities. A Butler batching plant and Jaeger truck-mixers are used.

In Bucksport, Calif., the Humboldt Ready Mix recently opened a plant operated by three brothers: Richard, Russell, and Charles Phillips. Equipment includes three transit-mix trucks, two 14-cu. yd. dump trucks, a Hough 1-cu. yd. loader, and a 2-cu. yd. dragline. Future construction plans include the addition of an office building, a warehouse, and other structures to house equipment.

Addition of a ready-mix plant to the facilities of the Irving Brothers Gravel Company at Paulding, Ohio, was announced by Jim Irving, manager. It was stated that the plant capacity is approximately 100 cu. yd. per hour. Seven transit-mix trucks serve this operation.

# Develop Low Cost Handling System for Bulk Fly Ash

another ON THE SPOT report

FRED and Lynn Kohlhagen (father and son), owners and operators of the four-year-old K & K Transit Mix Concrete Company, of Frankfort, Ill., are justly proud of their comparatively small ready-mix plant. They have combined ingenuity and hard work to establish a steadily increasing concrete business in a thriving little community located about 35 miles southwest of Chicago. Daily output with four truck mixers averages about 80 cu. yd. of concrete.

Probably the outstanding feature of the two-stop operation is the materials handling system. After experiments with fly ash as a blend with portland cement had established the desirability of this practice, the company was faced with the problem of how to work out a bulk-handling system that would not be out of all proportion in cost to the rest of the plant. Fly ash can be obtained in the Chicago area by bulk truckload, and it was decided to take advantage of this type of delivery.

It takes about 150 lb. of fly ash per cu. yd. of concrete to maintain 7 and 28 days' strength approximately equal to those obtainable with straight portland cement when the cement factor is reduced by approximately one bag per cu. yd. The Kohlhagens are thoroughly pleased with the smooth operation of this fly-ash handling system and report that its total cost was under $2,000.

The ground storage bin is a concrete stave silo, erected between the railroad siding and the cement elevator, straddling the screw conveyor normally used for unloading cement from hopper bottom cars. The silo is 12 ft. in diameter, and it has ample storage capacity for four truck loads of fly ash. The material is discharged from the tail gate of the truck through collapsible rubber boots into two receiving spouts inserted in the cover of the screw conveyor.

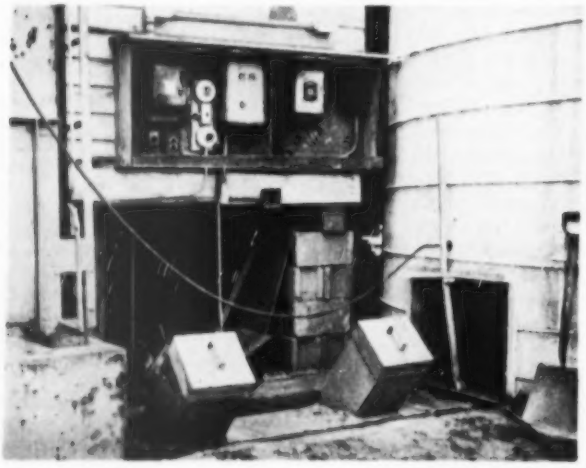
A single Johnson bucket elevator is used for both fly ash and cement. By swinging a flop gate (installed for the purpose) into proper position, the fly ash is discharged into a vertical spout which angles into the

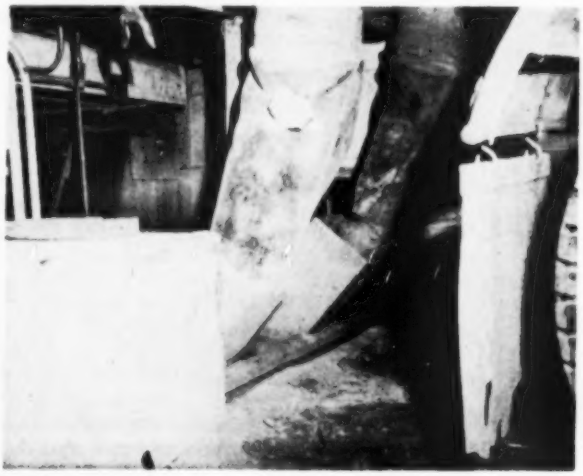
Lynn and Fred Kohlhagen, a father-and-son team, the energetic owners and operators of the K & K Transit Mix Concrete Company at Frankfort, Ill.

A bulk carrier discharging fly ash into the silo. The company obtains fly ash by bulk truckload from the Chicago area.

The two spouts which receive fly ash for storage. The screw conveyor beneath carries it into the elevator at the left.

Below: A closeup of fly ash being discharged from a truck to the silo through collapsible rubber boots into the receiving spouts.





A general view of the company's facilities, with three of its trucks waiting to be loaded.

batch room. The flow of material into the batcher is controlled by means of a rotary valve. During operation the fly ash first fills the vertical stack-like bin above the batcher, and overflows into the silo; and when additional fly ash is needed, the gate at the bottom of the silo is opened. Thus the material is allowed to flow into the screw conveyor and back up to the spout over the batcher. Compressed air is used to fluff the material under the silo so that it flows freely into the screw conveyor; and the rotary valve, which is also supplied with air jets, is used above the batcher. Darex A.E.A. is used as an air-entraining agent.

The plant storage system includes a sizable building for warehousing bagged cement. In the event of a breakdown of the bulk handling system, or a shortage of bulk material, delivery schedules can be maintained by switching temporarily to bagged cement. Bags are broken and dumped into a 12-bag portable hopper which operates on a monorail track running from the warehouse to a point directly below the cement batcher, where a gate is tripped to discharge the contents into a waiting truck mixer. This emergency system has been the means of keeping the plant in operation on several occasions when a complete shutdown would otherwise have occurred.

Aggregates are received by rail, the hopper cars discharging directly onto a Barber-Greene conveyor belt which feeds a Blaw-Knox aggregate bin. All bins are equipped with Bin-Dicators to indicate when the supply of any material becomes dangerously low. A Lull loader mounted on a Case tractor is used for cleanup work as well as for spotting the hopper cars on the siding. Truckmixers now in operation include a 3-cu. yd. C.M.C. Transcrete, a 3-cu. yd. Worthington Ransome, and two 2-cu. yd. Jaegers. A new 5½-cu. yd. truckmixer is on order; and work has begun on the installation of equipment for cold weather operations. An automatic dispenser for Pozzolith is also being installed.

## Types of Cement—

(*Continued from page* 204)

**Chemical Reaction of Aggregates in Concrete** In recent years it has been found that chemical reactions of aggregates in concrete may sometimes cause abnormal expansion. The alkalies in the cement, $Na_2O$ and $K_2O$, may react with certain components of some siliceous aggregates to cause the abnormal expansion. The service records of concrete structures provide the best information for the selection of aggregates. When an aggregate has been used extensively with cements of different compositions, and the structures have good service records, it can be assumed that the aggregate does not contain material that produces deleterious reactions in concrete. The A.S.T.M. specifications describe two laboratory tests for determining the potential alkali reactivity of aggregates. They are:

(1) Tentative Method of Test for Potential Alkali Reactivity of Cement-Aggregate Combinations, C227, and

(2) Tentative Method of Test for Potential Reactivity of Aggregates (Chemical Method), C289.

Laboratory tests and the service records of concrete structures have demonstrated that there is no evidence of abnormal expansion when reactive aggregates are used with low-alkali cements, total alkalies as $Na_2O$(% $Na_2O$ + 0.658% $K_2O$) not to exceed 0.60 percent. Tests have shown that some pozzolanic admixtures are effective in preventing the abnormal expansion associated with the alkali-aggregate reaction, while other pozzolanic materials gave no improvement and in some cases actually aggravated the expansion and map-cracking. These results indicate that pozzolanic admixtures should be fully tested prior to use as correctives for the alkali-aggregate reaction.

## P.C.A. Issues New Booklet On Soil-Cement Techniques

*Short-Cut Soil-Cement Testing Procedures for Sandy Soils,* a newly-released Portland Cement Association publication, explains procedures which will materially reduce the amount of work previously required in testing soils for soil-cement pavement construction.

Soil-cement is a tightly-compacted mixture of soil, portland cement, and water, which forms a strong paving material as the cement hydrates and solidifies the mixture. Scientific testing and control methods have been developed by the P.C.A. since 1935, insuring satisfactory performance of this type of construction for light traffic roads and streets, airports, and parking areas.

Included in the new booklet are 10 charts on cement content, moisture content, and density of soil-cement. These charts are so planned that when correctly used, they will reduce the laboratory technician's work by showing the amounts of materials to use for individual tests. Use of the charts does not involve new tests or additional equipment.

The only laboratory tests required in following the new "short-cut" test procedures are a grain-size analysis, a moisture-density test, and compressive strength tests. Relatively small soil samples are needed; and except for results of the 7-day compressive strength tests, all tests can be completed in one day.

Individual copies of *Short-Cut Soil-Cement Testing Procedures for Sandy Soils* are available free in the United States and Canada on request to the Portland Cement Association, 33 West Grand Avenue, Chicago 10.

Eric H. Lichtenberg, 68, a patent research engineer with the Koehring Company since 1940, and the firm's chief engineer for many years before that, died recently in Milwaukee, Wis. He was the holder of several patents on concrete mixing and paving machinery.

# WHAT ABOUT PARTNERSHIPS?

AT ONE time or another every sole proprietor has probably considered the idea of a partnership, if he has not actually entered into one. Many successful partnerships exist in the concrete industries, and there is little doubt that in some instance partners enjoy special advantages and are financially better off than they would be as sole owners.

Nevertheless, many enter into partnership only to experience serious financial setbacks. Some never fully recover from the disastrous consequences of partnerships badly conceived and hastily entered into without due consideration of possible drawbacks.

A persuasive case can be made for a partnership. Usually a partnership provides more capital, by pooling resources, than any one partner could put into the business as sole owner. In fact, the lure of additional capital frequently overshadows good judgment. Partnership also provides additional management and supervisorial personnel. This last may be a liability, in practice, instead of an asset.

External evidence of successful partnerships should not be taken as an indication that success is automatically linked with partnerships. Successful partnerships stand out in business. Not so easily observed are partnerships that are quietly folding. Rarely are reasons for partnership dissolution defined in trade circles. Customarily, such failures are dismissed with the comment "Partners can't agree." This is classic oversimplification.

The pitfalls of partnership should be carefully weighed before a partnership is formed, and should not be left until after papers have been signed. While it is important that partnership agreements be carefully drawn with expert legal aid, the most explicit agreements will not assure day-by-day amicable partnership relations.

Two businessmen entering into a partnership should be temperamentally suited to each other. Personal friendship may prompt a partnership. However, friendship is no guarantee the partnership will last. Some friendships can't stand the strain of too close daily association. Some of the most successful partnerships are those of partners who rarely mingle socially or meet outside business hours.

Mutual respect is a fundamental requirement. This partnership requisite is not likely to be found through the medium of a "partner wanted" ad in the classified section. Partners should respect each other not only as businessmen but as distinct personalities. If a prospective partner has reservations as to another's integrity, personal habits or good business sense, no partnership hould be formed. Such a relationship is not likely to last.

**By HAROLD J. ASHE**

The question of responsibility and authority of each partner needs defining. Unless specifically stated to the contrary in the agreement, each partner has equal partnership authority. Partners are equal in management even though they do not supply equal amounts of capital.

Here again, temperament as well as good sense is involved. In a large business much of this question of authority will be resolved by a division of duties, each partner being sufficiently preoccupied with his own work so that he has no desire to impose his authority in the realm of another partner. This leaves only broad management and policy problems to be worked out by mutual agreement after discussion.

If officiousness, mistrust, or plain meddling is injected in the petty daily details, only trouble can result. The constant questioning of every action of one partner by another will bring constructive work to a stop. Such wrangling over details probably contributes more to partnership liquidations than any other single cause.

Ideally, a partnership should consist of two or more individuals, each of whom brings to the partnership certain talents not duplicated by the other partner or partners. That is, the combined talents of all the partners should encompass more kinds of talent than any one of the partners possesses.

Frequently traits are complementary. For example, one partner has more than ordinary caution, while the other is inclined to take chances. If such partners truly act as check reins on each other, they may present a formidable combination. The cautious partner keeps the other within bounds; and the cautious partner is kept from outsmarting himself with his business conservatism. This kind of combination, of course, calls for a careful balance of power and a certain amount of give and take in resolving divergent views.

There are many variations of such combinations. One partner may be preoccupied with conserving assets, studying trade trends, buying advantageously wherever possible, devising cost-reduction efficiencies, and generally acting as a watch dog. The other partner may thrive on hustling business activity; he may be a good mixer and salesman, and he may be able to inspire employees to their best efforts. The latter knows how to get business; but, equally important, the former knows whether the business obtained is profitable—and why. Neither duplicates the efforts of the other, and neither envies the other his job.

Unfortunately, too many partnerships hastily contracted are top-heavy with identical talents. Too often, two partners, both having mechanical skills and little management know-how, go into business. Neither appreciates the importance of watching overhead, mounting production costs, and other important matters. Too often they are "volume happy" to the exclusion of being profit conscious. Such a partnership has only one distinguishing characteristic: *it will go broke twice as fast as each of the partners would if each were operating as a sole proprietor.* Business incompetency multiplied in a partnership divides business profits.

In a small partnership each partner may do a little of everything. If one is a better salesman than the other, and the emphasis is on drumming up business, he may quickly resent the other partner's tendency to let too much business slip away.

The sole proprietor, seeing his own mistakes, may come to his senses, place the blame where it properly belongs, correct his errors, try to strengthen his weak points, and go on from there to establish a successful business. Such a basic reform is far less likely in a partnership venture. Fixing the blame, with the *other fellow* always at fault, becomes an end in itself. This is not conducive to an objective, temperate analysis of any situation.

There is always the possibility that one partner will deliberately drag his heels, secure in the knowledge that his associate (so long as the partnership lasts) must "carry" him.

A partner, as well as an employee, can be non-productive. However, few partnerships can afford the luxury of a non-producing or a partially producing partner. (The exception, of course, is an inactive partner, whose return on his investment is scaled to the fact he is not contributing personal services.)

Even more frequently, lagging may be charged when it is not justified. Thus energies are turned inward by counter accusations, when an effort should be made to pull the business out of the slump. In this kind of partnership even the most routine chores and minor decisions become the subject of time-consuming partnership discussion, often of acrimonious debate.

Ties of blood should not blind a businessman to the risks of partnership. It is true that some of the soundest business ventures are composed of fathers and sons, or of brothers, and there are numerous fine husband-and-wife business partnerships. Nevertheless, relationship by blood is no assurance a partnership will survive. Not infrequently a business that has thrived under a sole proprietorship comes upon evil days because an incompetent and unappreciative relative is taken in as a partner.

If a sole proprietorship has grown to substantial proportions, an owner may look for trustworthy assistance on which to place some management responsibility. What is more natural than bringing a relative into the business? Why not share his good fortune and at the same time lighten the burden in his declining years? Whom can a man trust, if not his own kin?

Frequently this kind of partnership does work, particularly if the new partner has served an apprenticeship in the business, and has shown some aptitude and demonstrated an ability to carry his own weight. On the other hand, if partnership is given to relatives, without a testing period, they may neither appreciate their good fortune nor attempt to justify their new responsibilities by putting forth the efforts required of partners.

One operator who built up a solid business over the years by his own efforts unwisely took in some relatives as partners. He got off the hook only by going through bankruptcy court. At 55 he is starting all over again with two strikes against him because of a very human but unwise decision.

Another cause for partnership dissension concerns personal withdraw-

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als from the business. One partner may wish to draw out every dollar of profit as fast as it is earned and may even propose drawing upon the capital. Another partner, having an ambitious long-range view for expansion, may want to plow back most of the earnings for growth, holding out only a modest amount for personal needs. Such a difference of opinion is fundamental, and it may be impossible to reconcile in a partnership.

Moreover, there may be compelling economic circumstances urging one partner to demand heavy withdrawals. He may be entirely dependent on business earnings for his personal needs, while the other has an outside income. A partner with a small family may be intolerant of the demands on the business made by another partner having a large family, or extraordinary expenses, such as prolonged family sickness.

Many a partnership has been wrecked by the machinations of "silent"—even though not formally recognized—partners. Two men may be able to hit it off amicably in a partnership only so long as they have the blessings of their respective wives. When a wife needles her husband and agitates him, even the most promising partnership can go on the rocks.

In one case a partner's wife stooped to spreading malicious and unfounded gossip about her own husband and and the other partner's wife. To abate the gossip, the partners were obliged to dissolve their partnership at considerable loss to both.

Occasionally a partner's wife will be socially ambitious beyond her husband's means. Her personal needs, exercised through her husband, may make impossible demands on the struggling partnership. Before a partnership is consummated, partners might give a little thought to the "silent" partners involved in the deal. These partners can become extremely vocal.

Many a businessman, impatient at his inability to grow, is likely to draw erroneous conclusions about the desirability of partnerships. He may take on a partner for no better reason than to get additional capital. Welcoming the new capital, he may resent the new partner. Such capital can prove to be an insuperable burden on a business, unless the new partner has something more to offer than money.

In the case of an established business, insufficient capital may be a result of stagnation, rather than its cause. That is, lack of capital may simply mean the inability (or unwillingness) over the years of the owner to retain a part of the earnings in the business. If he is able to do so, and refuses, his future prospects are not bright. If he can not do so because the business earns too little, there is something fundamentally wrong. Additional capital will not automatically make a good manager out of a poor one. It may only provide more capital to mismanage. In addition, if capital is secured through taking in a partner, such capital saddles the business with an additional owner looking to an unprofitable business for a livelihood. The problem is not solved but only enlarged.

If a badly managed under-capitalized business can double its capital only by doubling the number of owners, nothing has been added. Its position remains shaky or becomes worse. It should be remembered that a large business can fail as easily as a small one, and for the same basic reasons. Moreover, the larger it is, the more difficult it becomes to avert disaster by personal belt-tightening.

It is common knowledge that each partner is liable for all partnership obligations. Yet, it is doubtful that most persons give this fact the attention it deserves when contemplating partnerships. Some partners, about the time they affix signatures to partnership papers, do not take a realistic view of the matter. Each partner is legally an agent of his associates; and in the conduct of the business, the action of each is legally binding on the others.

While partners may define among themselves the individual liability of each, this agreement is not binding on those outside the partnership. In event of failure, the enforcing of collections by creditors of the partnership may fall more heavily on one partner than another.

If one partner has assets outside the partnership and the other does not, creditors may bear down on the partner with outside assets if this becomes necessary to satisfy their claims. Or, one partner may conceal assets, while the other partner's assets are exposed to easy attachment.

In event that one partner goes into bankruptcy in another venture, such bankruptcy dissolves the partnership. The trustee of the bankrupt partner steps in and takes charge of the bankrupt partner's interest in the partnership, which is then liquidated to make available the bankrupt's share of the partnership to satisfy the claims against him.

A partnership is dissolved by the death of a partner. The remaining partner or partners must pay the estate of the deceased partner for the latter's interest in the business, including good will. Thus, death can put a strain on a partnership, and it may even force liquidation against the desires of the surviving partner.

Usually, when partners put up matching capital and contribute full time, the division of profits is equal. The exception is when one partner is conceded to bring more experience to the business.

However, when partners devote full time to the partnership, but one contributes more capital than the other, an equitable distribution of profits is difficult to arrive at by any formula. Thus, if one partner contributes $50,000 and another $25,000, both contributing full time with equal value for personal services, a two-to-one division of profits would be unfair. Some other division would be less likely to create friction. Thus, each might draw equal "salary" from net earnings for personal services. The remainder would be distributed in proportion to capital contributed to the partnership.

Salary, of course, should not be over-stated lest disagreement occur in the other direction, with too little return for the principal capital contributor on his capital. "Salary," as here used, is not to be confused with drawing against final profit distribution, but should be a *bona fide* payment for services only; this is true, even though, together with the profit divisions, it represents each partner's net profit, and must be so reported in the individual income tax return.

If a substantial part of partnership earnings are not distributed to the partners, this may cause an income tax hardship for one or more partners, and result in friction. Each partner, in filing his individual income tax return, is responsible for and must compute his income tax on the share of the partnership earnings credited to him. This share is reported in the Partnership Information Return, Form 1065, and must, in turn, be reflected in each partner's own return.

For example, if net partnership earnings are $25,000 and one partner's share is reported as $9,000, he may have difficulty in paying his income tax on that amount if he has actually received, say, only $6,000, with the balance remaining in the partnership.

# Trade Notes

H. E. Casey

Calsi-crete Corporation, now issuing franchises for the manufacture of the hydrous calcium silicate building material, Calsi-crete, has named H. E. Casey sales manager.

Mr. Casey was manager of structural products sales, Kaylo Division, Owens-Illinois Glass Company, for 10 years before joining Calsi-crete. Previously he was regional engineer with U. S. Public Health Service in Chicago.

C. W. Stuart, president of Jackson and Church Company, Saginaw, Michigan, of which Calsi-crete Corporation is a division, announced that Mr. Casey would screen and issue franchises, help franchise holders co-ordinate manufacturing and sales, and plan sales promotion programs.

Calsi-crete was recently introduced in this country after being developed and widely used in Europe. It can be nailed, sawed, and cut like wood. The material also has insulating, load-bearing, acoustical, and water-resisting qualities. It is used for walls, roofs, partitions, and fire-door cores.

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The appointment of M. F. Ledford of Adrian, Mich., as sales manager, and John L. Tuttle as assistant sales manager was announced by officials of the Stearns Manufacturing Company, Adrian, Mich.

Mr. Ledford has spent much of his business life in the concrete products industry. He started with the Anchor Concrete Machinery Company in 1925, and

M. F. Ledford

J. L. Tuttle

worked out of their regional sales office in Milwaukee, Wis. Since 1934 he has been connected directly with the Stearns home office in Adrian, and for the last five years he has been assistant sales manager.

Mr. Tuttle became affiliated with Stearns ten years ago in sales. For the last eight years he has been in complete charge of the purchasing department.

To better serve home builders in the area with specialty cement products, the Calaveras Cement Company, San Francisco, Calif., has appointed H. A. Lovegreen as sales representative for Southern California, Western Nevada, Arizona and Utah. Mr. Lovegreen's headquarters will be in the Architects Building, 832 West Fifth St., Los Angeles, Calif.

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The Burns and Russell Company, Baltimore, Md., has announced the development of an improved low-temperature glazing compound for lightweight block —Cermac Type B-3S, which is formulated to glaze in live steam. This process makes possible the production of glazed block without the installation of costly hot-air or infra-red heating equipment.

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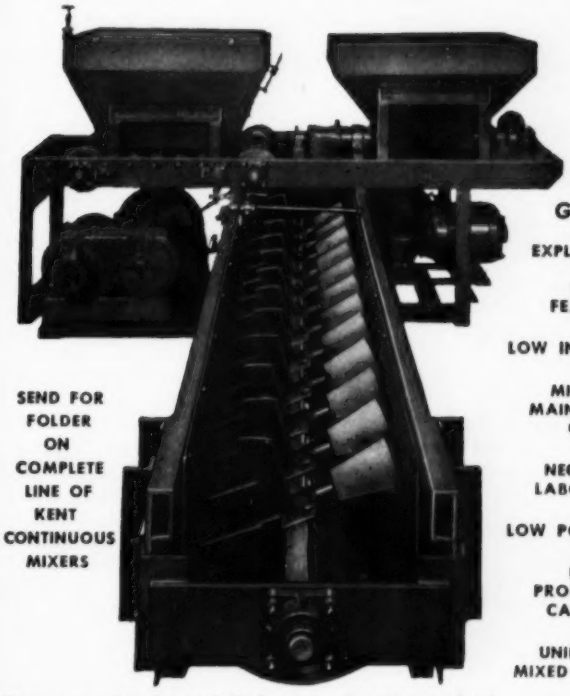
Gil Olson, Builders Supply Corp., Phoenix, Ariz., has been named one of this country's official representatives to the First International Congress of Concrete Product Producers, at Brussels, Belgium, in June, 1954. Mr. Olson's firm produces "Superlite" concrete block, a lightweight structural block, of which an estimated 76 percent of all homes in Phoenix are constructed.


KENT STEDIFLO for Economical, Volume Production of QUALITY CONCRETE



SEND FOR FOLDER ON COMPLETE LINE OF KENT CONTINUOUS MIXERS

Get the FULL EXPLANATION of these FEATURES

• LOW INITIAL COST
• MINIMUM MAINTENANCE COST
• NEGLIGIBLE LABOR COST
• LOW POWER COST
• HIGH PRODUCTION CAPACITY
• UNIFORMLY MIXED CONCRETE
• CONTROLLED OUTPUT
• STEADY PRODUCTION

WRITE for Complete Information

You can take the satisfied, enthusiastic word of the many KENT STEDIFLO users as your assurance of its efficient, economical operation, it's rugged construction and long service life with a minimum of maintenance expense. We'll be pleased to acquaint you with these fine people.

The KENT MACHINE COMPANY
CONCRETE PRODUCTS MACHINERY
Cuyahoga Falls, Ohio

# NEW MACHINERY and SUPPLIES

## • Steel Door Frame

Substantial economy in first cost and installed cost is offered the builder who uses a low-cost steel door frame developed by *Kewanee Mfg. Co.* for residential use. Installed in one-third the time needed for regular jam and trim, it

comes packaged in three pieces for nailing to the sub-frame. Made for 1⅜- and 1¾-in. interior doors, the frames have a recessed edge design for both plaster and dry-wall construction, another speed-up feature.

**Our Identification No. 101.**

## • Handy Air Hammer

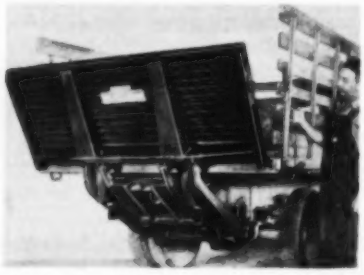
Scaling, chipping, chiseling and routing, star drilling, and many more jobs around a concrete plant can be done with the 6-in. Big Bully air hammer just announced by *Superior Pneumatic*. Weighing just a little over 3 lb., the

Big Bully beats out 9,000 blows per minute, yet can be handled in one hand. Full speed and power needs less than 7 c.f.m. of air. Finger trigger controls the action. Just the thing for chipping off concrete scale on chutes, mixers, etc.

**Our Identification No. 102.**

## • Elevating Tailgate

Loads of 2,000 lb. can be put on a truck or trailer by one man, using the hydraulic-powered elevating tailgate by *Heil Co.* A double-acting hydraulic cylinder mounted clear of the axle housing without any loss of ground clearance, controls the unit, and incorporates several features to protect both the load and the operator. Weighing 850 lbs., the Heiloader has a non-skid deck, corrugated for greater strength, and comes with ramp-type or square edges in sizes from 84x28-in. to 90x52-in. overall. Control levers are placed on each side



of the body for operator safety. The gate can be opened and lowered manually without starting the engine. Power normally comes from the engine by take-off, but an electric motor or a gasoline power pack can be used when the tailgate is mounted on a trailer.

**Our Identification No. 103.**

## • Lintel and Sill Forms

Forms for precasting sills and lintels, modular in size, are being offered by *J. W. Appley & Son*. Quickly set up, with four wing nuts, no tools are needed. Beams are cast of 2,700 to 3,000-lb. concrete in heavy or lightweight materials and standard lengths, 3 to 14-ft. lintels and 19-in. to 10-ft., 4-in. sills. These Little Giant forms are available immediately.

**Our Identification No. 104.**

## • Handling Sacks Easier

Eight to ten bags of cement or other bagged material can be handled conveniently at one time by a new floor truck offered by *Nutting Truck & Caster Company*. It eliminates the hazard of tipping the load to insert the nose of the truck,

using auxiliary wheels to roll it under a pallet on which the load is stacked. These also provide a fulcrum to more easily break back the load into wheeling position. The steel nose plate extends 9½-in. up the hardwood frame for extra reinforcement. Two standard sizes are available, 54 and 60-in. long.

**Our Identification No. 105.**

## • Folding Conveyor

A low-cost power-operated portable conveyor that raises to any angle has been developed by *Frank A. Kremser & Sons* of Philadelphia for general duty around the plant. Swivel casters for moving it, a power-driven safety screw lifting and lowering device that cannot fail in normal operation, and a reversible

motor are among the features. The 3-ply rubber belt has removable rubber cleats every 60-in. There are no sides to interfere with loads wider than the belt. Four sizes are available.

**Our Identification No. 106.**

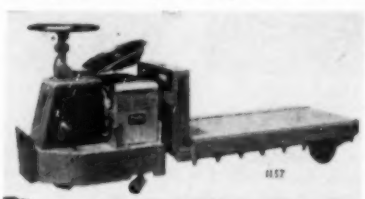
## • Water-Repellent

A clear silicone-resin water repellent that soaks into masonry without affecting its outward appearance has been announced by *Arco Co.* of Cleveland. Called Arroc, this "breathing" material allows water to escape from the masonry but stops seepage or moisture penetration. Common brick absorbs less than 2 percent by volume when treated with Arroc, compared to the total pickup of 31 percent in untreated brick, tests show. Applied by brush or spray, Arroc attains a high degree of water repellency within 24 hours of application.

**Our Identification No. 107.**

## • Electric Block Truck

Designed for the concrete block industry, an electric block truck developed by *Market Forge Co.* features smooth, jar-free operation. Spring suspension absorbs



the shock in transit, and a special valve cuts impact when lowering the load. It has a 3½-m.p.h. top speed. The driver can either stand or sit.

**Our Identification No. 108.**

### • Plaster-Mortar Mixer

A telescopic axle is a feature of a new 6-cu. ft. Rex plaster and mortar mixer being made by the Construction Machinery Division of the *Chain Belt Co.* In towing to the job site, the wheels are extended to 40-in. The axle can be telescoped so that the mixer will pass through

a 38-in. door for indoor mixing. Power from a single-cylinder Wisconsin air-cooled engine is transmitted through a gear reduction with a chain drive, to the mixer paddle shaft mounted on prelubricated anti-friction bearings. Criss-cross mixing is produced by four paddles. The drum tilts for fast discharge. A bag cutter is conveniently located over the mixer drum.

**Our Identification No. 109.**

### • New Truck Line

A completely new truck line, designed around the needs of the operator, has been introduced by *Mack Trucks.* It includes trucks and tractors in 4 and 6-wheel types, ranging from 17,000 lbs.

GVW to 70,000 lbs. GCW, with gasoline or diesel power up to 170-hp.

The highest possible payload capacity, one of the advantages claimed for the new models, has been achieved through more compact construction and lighter chassis, axles, transmission cases and wheels. The distance from front bumper to back of cab has been reduced to permit longer trailers or bodies, with increased capacity. A very compact engine, mounted well over the front axle, is readily accessible for quick servicing (illus.).

New transmissions, new axles, a cab designed for maximum driver comfort, increased maneuverability and steering efficiency, and many other refinements of Mack's well-known design components are featured in these new B series models.

**Our Identification No. 110.**

### • Hydraulic Loader

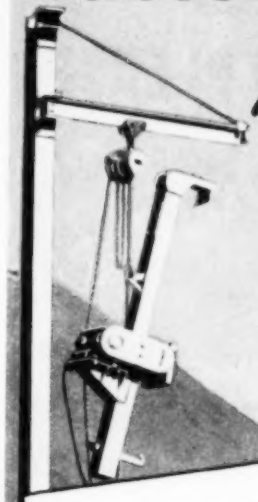
A hydraulic shovel loader designed to fit Case, Minneapolis-Moline, Shepherd and Oliver tractors is being made by the *Baker-Lull Corp.*

The Baker-Lull "Shoveloader" has a material bucket for loading and unloading of all types of materials. Other attachments are coal or snow bucket, bulldozer, crane, sweeper, rear leveling blade scarifier, and logging fork. It is said that the location of all operating parts ahead of the operator makes for greater safety, and that the design of the bucket and

lifting arms permits digging below the tractor level and dumping into trucks, hoppers or bins.

**Our Identification No. 111.**


# Faster Unloading with the *National Car Shaker*



FASTER, SAFER, LOWER-COST UNLOADING with the *low cost* National Car Shaker. Unloads a car in as little as six minutes with no man required in or under the car, under normal conditions. Unloads coal, coke, cinders, sand, stone, aggregates and all bulk materials.

Used and time-tested by hundreds of firms, both large and small. The time saved by Consumers Company, (see letter below) is typical.

Telephone

Consumers Company

79 WEST MONROE STREET Chicago 3 Ellsmere

BUILDING MATERIALS · READY MIXED CONCRETE SAND GRAVEL CRUSHED STONE

July 8, 1953

National Conveyor & Supply Co.,
350 North Harding Avenue,
Chicago, Illinois.

Gentlemen:

I am taking this means of expressing our pleasure in the efficiency of your car shaker. We have four National Car Shakers at our various yards and all are being used to unload sand from hopper cars.

The sand is received containing various amounts of moisture and prior to the use of your car shaker the sand was pushed down by hand, thus not only adding to the expense of unloading cars but also curtailing the amount of sand we were able to unload to a point below that which was required in our operations. We now unload even wet sand with sufficient speed to keep our plants running.

The shakers have been comparatively trouble free and on the few occasions when they needed service we found your company very cooperative in expediting the repairs.

Yours very truly,
CONSUMERS COMPANY

Robert J. Hummel,
Vice President.

RJH:lk

PATENTED

WRITE TODAY for information on how the National Car Shaker can save money, time and labor for you.

**National Conveyor & Supply Company**

348 N. HARDING AVENUE CHICAGO 24, ILLINOIS

### • Window Wall Units

Available from warehouse stock to concrete masonry manufacturers, a new line of Fenestra WindoWall units is being offered by *Detroit Steel Products*. These metal windows, framed in slender 1¼-in. solid rolled steel, have six or nine (3- by 2-ft.) lights each for a modern effect. Ventilators may be specified for any, or all, of the glass lights, and all-metal screens can be attached from the inside. Standardized production, simple installation and Bonderized prime paint make the windows attractive to builders and home owners.

**Our Identification No. 112.**

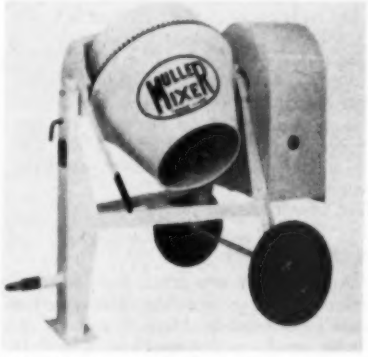
### • Warms Winter Work

The "hottest and cleanest burning" salamander is being marketed nationwide by the *California Heater Co.* for temporary heating purposes, indoor and out. A flame spreader and diagonal louvres in its stack produce smokeless heat and keep the greater part of the heat at the base for better sideward radiation. One oil filling burns 10-20 hours.

**Our Identification No. 113.**

### • Tilting Mixer

A new 3-cu. ft. tilting concrete mixer announced by *Muller Mchy Co.* is especially handy for small contractors who buy your ready-mix but still need small quantities to round out and finish the job. It can be had with a Briggs & Stratton gasoline engine (1.7 hp. at 2,800 r.p.m.) or a ½-hp. electric motor. The drum is all-steel welded, leak-proof and provided with a segmental gear ring for easy replacement.




**Our Identification No. 114.**

### • 5000-lb. Lift Truck

Power steering, power brakes, 12-in. clutch, a 100-hp. International motor, and 8- and 16-ft. lift masts feature two new models of the *Champ* lift truck.

The units have adequate road clearance for handling loads of 5,000-lb. over the most rugged terrain, Champ says. The 70-in. wheelbase has a 13-ft. turning radius.

**Our Identification No. 115.**

**NOVEMBER, 1953**

# MORE INFORMATION PLEASE

**PIT AND QUARRY PUBLICATIONS**
**RESEARCH DEPARTMENT**
**431 S. DEARBORN ST.**
**CHICAGO 5, ILLINOIS**

Please send more information on items described in editorial columns of this issue, as circled below.

101 102 103 104 105 106 107 108 109 110

111 112 113 114 115 116 117 118 119 120

121 122 123 124

**Please send more information on products shown in the Advertisement on:**

Page____ Product____ Adv.____

Page____ Product____ Adv.____

In addition I Would like information on:

_____

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Name____ Title____

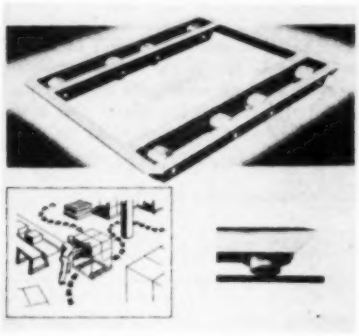
Company____

Address____

City____ Zone____ State____

### • Roller Pallets

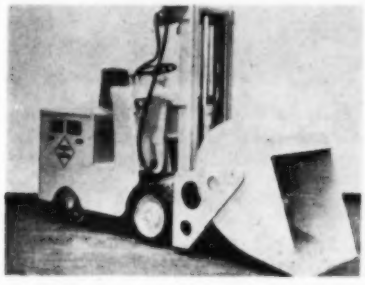
Palletized loads move swiftly in any direction with the Ace Swivel King pallet rollers introduced by *Frank L. Robinson Company*. Large, heavy gauge rolls, crowned for free rolling and floor protec-



tion, and heavy-duty bearings feature the units. The welded steel frame is available in sizes from 30-by-30-in. to 48-by-48-in., 4,000 lb. capacity. Special sizes and capacities are also available.
**Our Identification No. 116.**

### • Fork Truck Scoop

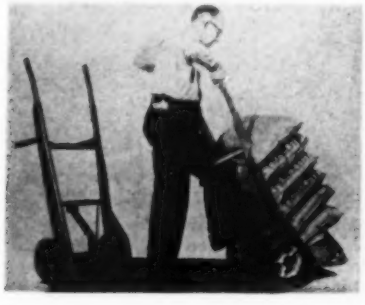
Designed for use on any *Elwell-Parker* fork truck, a 25-cu. ft. scoop attachment has been designed for handling bulk material, feeding hoppers and mixers, etc. It



gets hydraulic power from the truck's system, and its maximum load capacity is governed by the truck's capacity. A double acting hydraulic cylinder moves the unit from the loading to the carrying position. A replaceable wear strip fits the lip.
**Our Identification No. 117.**

### • Easier Hand Trucking

"Let your foot save your back" is the advice of the *Sutherland Supply Company*, describing a new hand truck improvement. The device, a lever lift operated by foot pressure, lifts and tilts the load with little strain on the worker.



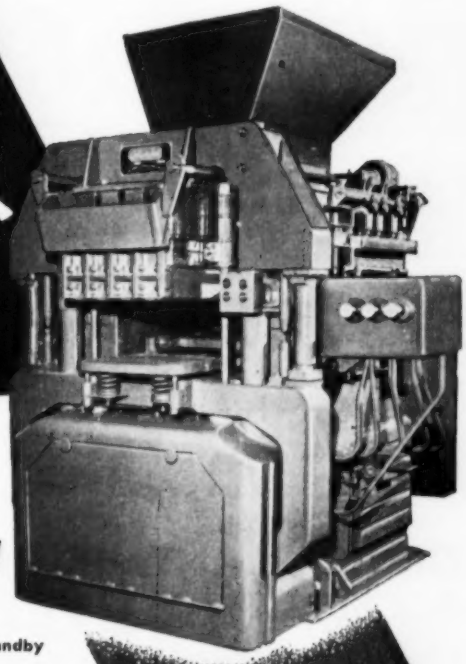
Other features of the 16-lb. truck are its tubular legs, built without braces, 10-gauge steel sides, 1,000-lb. capacity, and sack protecting fenders. Age, weight or lack of experience should not keep a man from handling trucks of this type, Sutherland says.
**Our Identification No. 118.**

### • Portable Air Heater

A redesigned standard model *Herman Nelson* portable air heater has been placed on the market. It features a Briggs & Stratton gasoline engine, the only self-contained gasoline-fired unit in the Nelson line. A fuel metering valve allows considerable fuel savings, since it can reduce the capacity of the unit from its

385,000 BTU's capacity to 100,000 BTU'S per hour when desired.
**Our Identification No. 119.**


Columbia's NEW, IMPROVED Fully Automatic 2-BLOCK



leads the field in fast production of high quality blocks!

- 4-6 Cycles Per Minute
- Electronic Controls with Standby Manual Controls
- Vibration Under Pressure
- Standard Plain Pallets

● Far ahead in production capacity: The famous Model 8, 2-Block Columbia offers the operator lower initial investment, PLUS highest quality workmanship, and low maintenance through rugged construction. Proven and tested for years under all aggregate conditions—here's the biggest dollar's worth of machinery on the market today!

OTHER Columbia LEADERS:

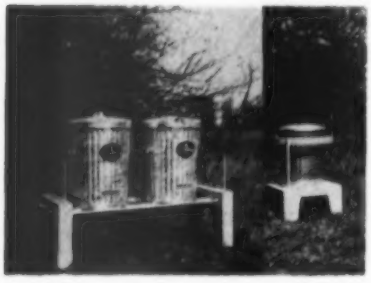
Model 12, 3-Block
Columbia Basic Block Machine
Batch Mixers
Block Splitters
Pallet Returns, Cleaners and Oilers

*Nationwide Sales, Parts and Maintenance Service* with headquarters in the following states: Washington, California, Wisconsin, Mississippi, Florida, New Jersey, South Carolina, and Virginia. Fast service maintained to all parts of the country. Write today for additional information.

Columbia MACHINE WORKS
107 GRAND AVENUE • VANCOUVER, WASH.

### • Concrete Garbage Racks

Developed in conjunction with the Detroit and Battle Creek boards of health, concrete and steel and concrete benches for garbage cans are being used to retard the rat menace as well as improve the



beauty of the domestic scene. Designed by *Concrete Mold & Engineering Company*, these racks should meet the specifications of local ordinances requiring elevated garbage containers.

**Our Identification No. 120.**

### • Variable Speed Drive

A variable speed drive in ½, ¾, and 1 hp. capacities has been developed by Reeves Pulley Company, Columbus, Ind.

The "Flexi-Speed" drives may be mounted in almost any position around the driven shaft and may drive in any direction. They can deliver any speed within a ratio of 8 to 1. The speed control handle may be located in any of

eight positions perpendicular to the motor shaft or parallel to it. Six different length belts accommodate a variety of shaft center distances.

**Our Identification No. 121.**

### • Dump Truck Loader

A loading bucket that mounts on the front of a dump truck and loads it back over the cab is being manufactured

by the *Ernest Holmes Co.* of Chattanooga, Tenn. Installed on most 1½-2 ton trucks, the loader shovels up about a half-yard (1,500 lb.) per bucket. All operations are controlled by the driver from his seat. Hydraulic cylinders provide the crowding force on the elbow-action arms. The sub-frame of the unit, electrically welded into a rigid unit, suspends below the truck frame anchored securely at four points. In top position, the shovel is 115 in. above the truck frame. It will do light digging to 4 in. below ground level. Net weight is 2,200 lb.

**Our Identification No. 122.**

### • Scoop Bucket for Yale

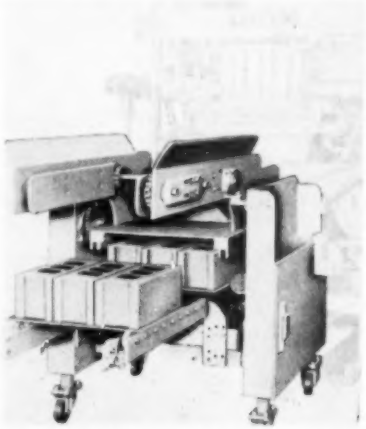
A new hydraulic scoop attachment for Yale life trucks gives you controlled dumping at any desired discharge rate and at any elevation up to the maxi-

mum height of the lift, *Yale & Towne* says. Welded of half-inch specially-hardened steel, the scoop is quickly attached or removed.

**Our Identification No. 123.**

### • Pallet Return

This front pallet return, mounted on rollers, has been added to the Bergen Machine line. It returns empty pallets above the outcoming block. The unit operates under separate power, a feature



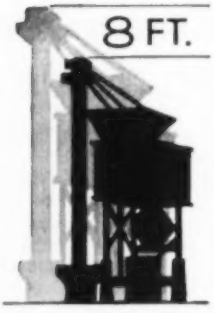
which is said to eliminate the jerking movements which may cause cracking. It also makes for easier repairs to the center section of the block machine.

**Our Identification No. 124.**

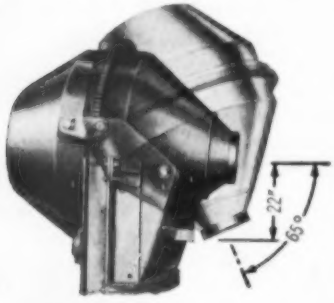

**Burmeister**

"TILT-UP" MIXER

CUTS PLANT HEIGHT AS MUCH AS 8 FEET




Burmeister's patented "tilt-up" feature—which reduces the mixer's headroom requirement—permits lower plant heights. This means easier crane loading, lower power costs, lower initial costs, less costly "conversions," increased portability, and better over-all control.




• In addition to reducing plant height, Burmeister's 3 cu. yd. "Tilt-Up" Mixer (left) provides a steeper 65° discharge from one spot, eliminates segregation of concrete and the danger of accidental discharge. It is simple to install, and has an integral hydraulic system—no compressor is required. Write for name of your nearest Burmeister Distributor, without obligation.

SEND FOR FREE CATALOG

*Your copy of Burmeister's new illustrated Catalog is now available. Write today!*

COMPLETE PLANTS FROM A SINGLE SOURCE

**Burmeister**

L. BURMEISTER CO., 4631 W. MITCHELL ST., MILWAUKEE 14, WISCONSIN

# Botched Batches

**Annexation**

A NEWSPAPER clipping we've just received says that "Texcrete Hayride Building Blocks" have withstood the test of service in thousands of structures. That's the trouble with those Texans—they won't even let a neighboring state hang onto a piffling little distinction like a song entitled *Louisiana Hayride*.

**False Alarm**

THE test tube lads have chalked up another major victory with the development of a process for making granite. Seems they have succeeded in crystallizing boiling mixtures of silicon, potassium, sodium, and aluminum to produce a material which cannot be distinguished under the microscope from granite.

This announcement should not touch off a wave of suicides among operators of granite quarries. The reason the bright boys found out that the stuff they had made looked okay under a microscope was on account of they *had* to use a microscope to see it at all.

**Foresight Saga**

THE *Journal of the American Medical Association* reports to an eagerly awaiting world that concrete burial vaults make satisfactory receptacles for the disposal of radioactive waste. No doubt that's a problem we'll have to face one of these days, but it wouldn't surprise us a bit to learn that Uncle Sam has a 999-year supply of the things stashed away somewhere.

**Change of Rules**

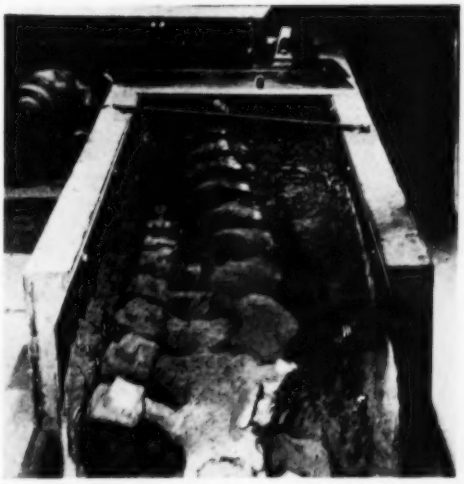
ONE more of our dwindling illusions took a severe beating the other day when the American Management Association came out with the forthright statement that marrying the boss' daughter is no longer the key to success in industry. The association spokesman, however, didn't come right out and say that becoming the boss' son-in-law would prove to be an insurmountable handicap, so perhaps those who have contracted this formerly useful relationship might maintain it for a while on a what-the-hell-do-I-have-to-lose-basis.


3 Big ADVANTAGES of the ANTHONY *Continuous Mixer*

1. Power requirements are actually less than 1/5 that of batching operations. No "peak" loads involved. No great weight of material in trough.

2. Minimum blade wear because of light loads in trough. Low replacement costs.

3. Replacement of trough often not required for 20 years, even if material is highly abrasive.



One of two No. 1530 ANTHONY Mixers in operation at plant of Grays Ferry Brick Co., Conshohocken, Pa.

*Write Today for Bulletin*

CONSTRUCTIONAL FEATURES: Completely adjustable blades—64 in one mixer. 12 foot standard replaceable mixer trough. All welded, heavy steel plate frame. Mixer will handle any dry or semi-dry material. Five sizes available.

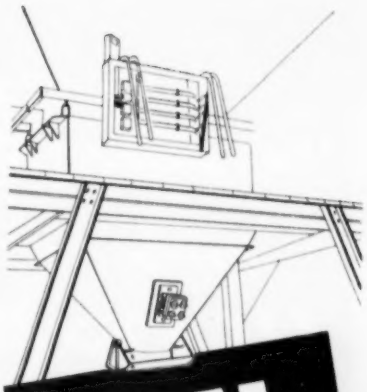
THE W. A. ANTHONY ENGINEERING CO.

13088 Pleasant Valley Road, Berea, Ohio • Phone: Cleveland, Ohio—Victory 3-7209

Engineers and Designers of—

Moisture Determination Equipment • Constant Volume Feeders • Conveying Equipment





BIN STUCK LATELY?

Concrete products processing plants everywhere have found CLEVELAND air vibrators the solution to their arching, bridging and sticking problems.

With a CLEVELAND, materials move through handling devices efficiently and economically, thus cutting down production time and costs.

We have a size and type, either quiet or standard, to fit your requirements.

*Write for our new catalog No. 109.*

THE CLEVELAND VIBRATOR COMPANY

2710 Clinton Ave. • Cleveland 13, Ohio

Here's the

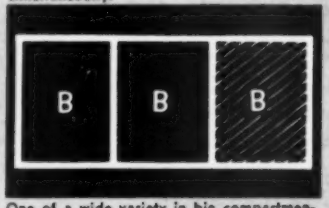
# HELTZEL TYPE-TWO

## The *LAST WORD* in Fast-Acting Portable Bins

Here's the last word in portable batching plant design . . . the New Heltzel "Type Two" fast-working aggregate or aggregate-cement batcher that has whisked through its initial on-the-job tests with colors flying. Capacities 150 and 200 Tons. Precise, fast, accurate and versatile, the "Type Two" can be erected or dismantled in a few hours. Easily carried over the road, and well within highway limitations. Variety in bin compartmentation arrangements, makes possible blending for almost any combination mix. Cement included on Ready Mix operation. Dual batcher loads two truck compartments simultaneously on paving setup.

Automatic electronic batching equipment easily adapted to the plant, permits batching of 250-yards-per-hour with less than 1 25th of 1 percent error. And all this with simple push button operation. Before you purchase new batching equipment, see your Heltzel representative or write the factory direct about this amazing new high speed, portable "Type Two" bin and batch plant.

Dual Batcher loads two truck compartments simultaneously.




One of a wide variety in bin compartmentation arrangements that make possible the blending of almost any combination mix.

**Available in Fully Automatic Electronically Controlled Series . . . . .**

## Another New Installation

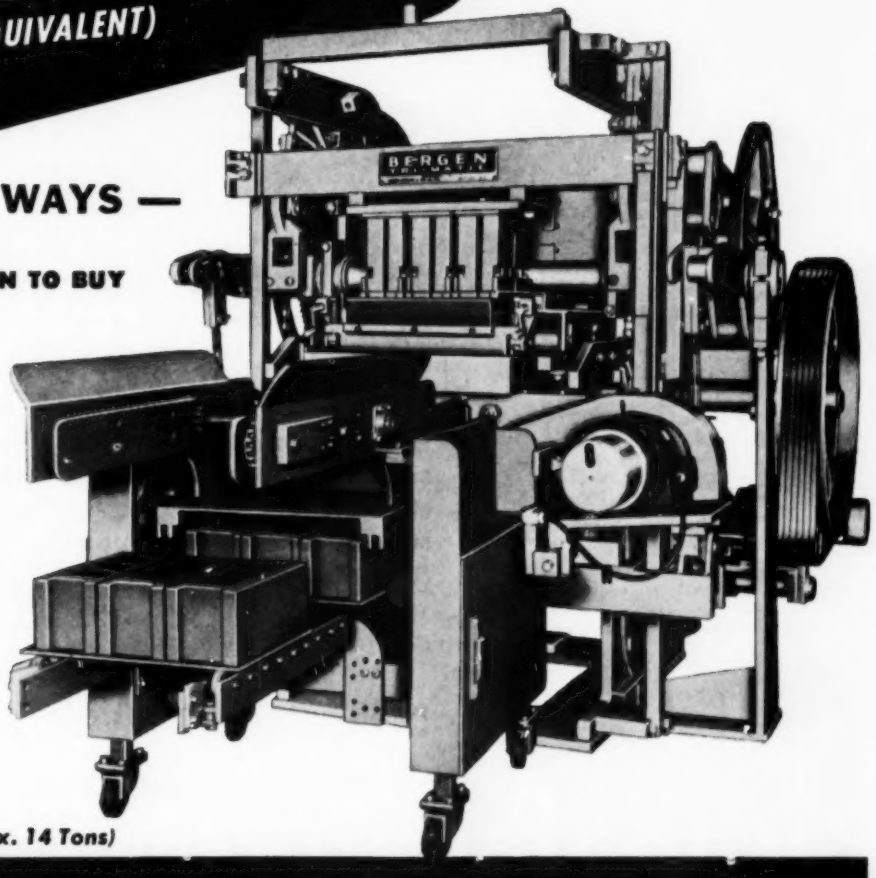
THE HELTZEL STEEL FORM & IRON CO. WARREN, OHIO

# BERGEN TRI-MATIC

with **FRONT PALLET RETURN**

# 1,000 BLOCK PER HOUR

*(8" EQUIVALENT)*



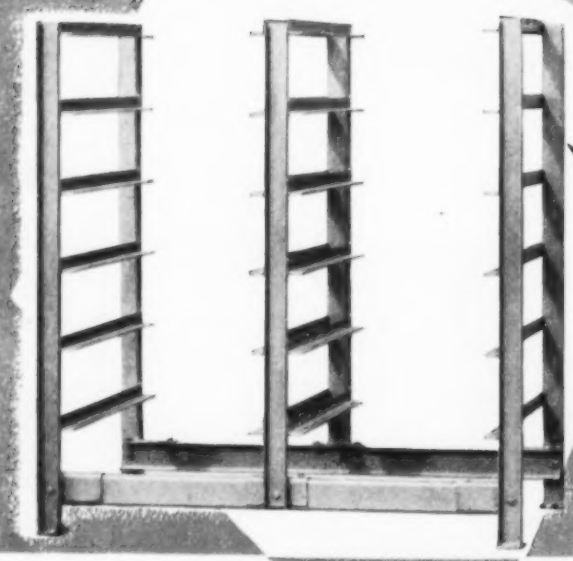

## AVAILABLE 3 WAYS —

- **ON LEASE BASIS**
- **LEASE with OPTION TO BUY**
- **OUTRIGHT SALE**

*(Shipping Weight—Approx. 14 Tons)*

**BERGEN MACHINE & TOOL CO., INC., NUTLEY, N. J.**

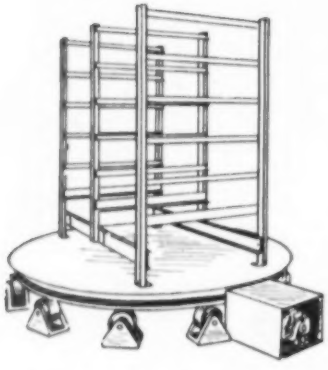
# Chase Concrete Block Racks



corrosion-resistant, high-strength alloy steel!

## built to your specifications

***1 or 2 compartment to fit any size Pallet***



Power-driven or manually operated, Chase turntables speed loading, unloading and cubing operations. All sizes and capacities. *Write for details.*

Whether your block rack is specially designed, or is a standard style, Chase racks will suit your requirements exactly.

Improved rigid side sill connection and sturdy construction go into every Chase Block Rack. Years of service are added by use of corrosion-resistant, high-strength alloy steel. Chase racks are furnished in any style or capacity, are shipped knocked down for low freight costs. Assembly is easy, no special tools or welding are required. *Write for specification sheets and further information.*

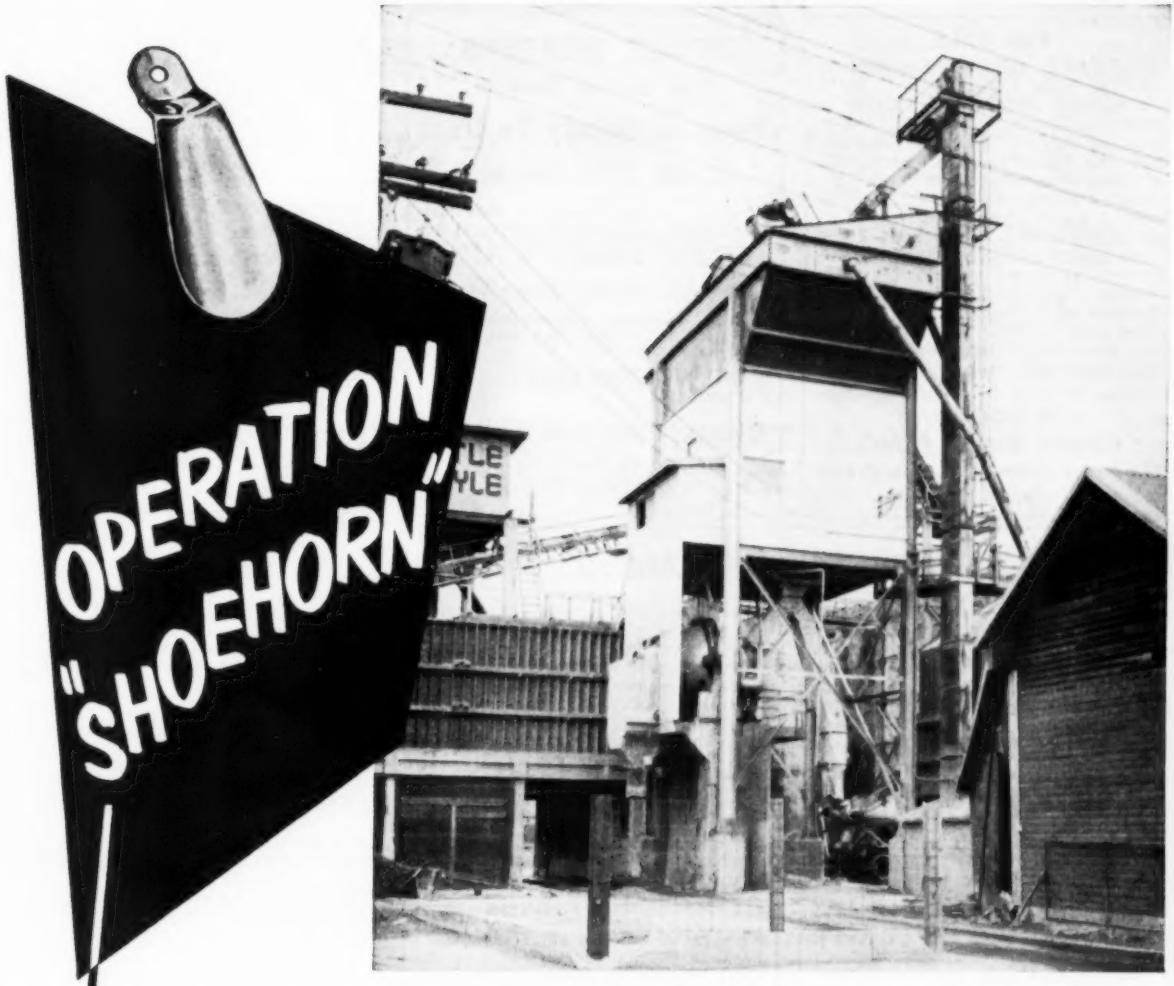
**Pallets — all sizes in plain steel.**

Chase

*SERVING THE CONCRETE INDUSTRY FOR OVER 50 YEARS.*

**FOUNDRY & MANUFACTURING CO.**

2300 PARSONS AVENUE • COLUMBUS 7, OHIO




# by the BUTLER ENGINEER

They *had* to expand — but convenience for their ready mixed concrete customers required that they stay in the same cramped downtown location. The yard was too small even for the old plant. Still, the existing buildings had to remain.

The various plans that were submitted looked like jig-saw puzzles — jig-saw puzzles with built-in headaches.

So they called in BUTLER!

Here are just a few things in the BUTLER solution: the aggregate conveyor was designed as a dog-leg with a cut back on its second flight at an acute angle of only 19° in order to get height and clear obstacles in unbelievably small space. Even the overflow downspout turned a corner. But all buildings were untouched — even the old cement bin was utilized — in place. And production was increased enormously.

The point is this: when the BUTLER engineer does the planning, everything fits and works like the right key in a lock — even under "impossible" conditions.

(Above.) A BUTLER W-198 Bin with extensions to provide 254 yard capacity and a 2 yard mixer — plus a lot of engineering — brought production up to the required high level.

★

If you want pictures and descriptions of a wide variety of BUTLER Ready Mixed Plants, just write for Bulletin 185. Send a postcard today.

**BUTLER BIN CO.**
987 Blackstone Avenue
WAUKESHA, WISCONSIN

## FOR SALE

Lith-I-Bar 2 Block fully automatic machine with air offbearer. Purchased new Oct. 1952. This is a special built machine with all heavy duty cylinders. Machine complete with the following attachments, 3", 4" (core & solids), 6", 8", 10", 12", square & round chimney. Extra mold box for quick change-over. 10 H.P. air compressor. 70 steel 60 block racks 2200 steel pallets (clean). Improved, foolproof pallet return & cleaner (optional with purchase). Machine and attachments available after Jan. 1, 1954. Reason for selling, installing 3 block machines. Any reasonable offer will be considered.

*Can be seen in operation at*

**THE GOODMAN CINDER BLOCK PLANT**

**Erie Street Honesdale, Pennsylvania**
**Phone 1105**

## SPACE HEATERS

**War Surplus Bargain**

**New — Ready To Use!**

**40,000 BTU capacity**

—Burning gasoline, kerosene or diesel fuel.
—Electric blower—12 V. DC or 110 V. AC using small transformer which we furnish with each heater.

**Portable, Quick, Clean Heat**

Ideal for curing room, concrete plants, work under construction, emergency heat, or auxiliary heaters.

**$95.00 each**

**Clapp, Riley and Hall Co.**

**14 No. Clinton St., Chicago 6, Illinois**

## New Lith-I-Bar Joist Machine For Sale At A Discount

Due to a special situation which will be explained to legitimately interested parties, we are offering a brand new Lith-I-Bar Joist Machine for sale at a greatly reduced price. This machine has all of the latest improvements and is ready for immediate acceptance. If you want to capitalize on this fastest growing, most lucrative phase of the precast concrete business . . . write for complete information and a descriptive booklet today. This is a once-in-a-lifetime bargain!

**Address your inquiry to:**

**R. E. L. GRAHAM, V.P.**
**LITH-I-BAR COMPANY**
**HOLLAND, MICHIGAN**

## REPRESENTATIVE WANTED

An opportunity exists to represent a leading manufacturer of concrete block plant equipment in the three South Eastern states. A long time resident of that area is preferred. Experience in the Concrete Block Industry is more important than sales experience. This unusual business opportunity is available on a drawing account and commission basis. It offers a potential gross income of $20,000.00 or more per year.

Replies treated confidentially. Give age, experience and other pertinent data.

**BOX NO. MO-604, c/o THE CONCRETE MANUFACTURER**
**431 South Dearborn Street Chicago 5, Illinois**

## APPLEY BLOCK MACHINE (COMPLETE WITH)

25 metal racks.
1400 (8x8x16) Steel Pallets.
94 Aluminum Pallets.
Double Bull Nose Sash Attachment.
100 Double Bull nose sash Pallets.
Bull Nose Attachment.
300 Bull Nose Pallets.
315 (8x12x16) Foundation Pallets.
Package Price $2500—used, but good condition.

Interested in purchasing used 4 inch Bell-type Concrete Tile Machine.

**DALMO CEMENT PRODUCTS CO.**
**FAIRBURY, NEBR.**

## WANTED: Septic tanks that need cleaning!

BIONETIC is a safe, sure, economical method.

Cleans sewage solids from tank
Eliminates odors
Cleans tile fields, prevents plugging
Cleans grease traps
Harmless to humans, and plumbing

BIONETIC at $4.25 per pound, or case of 12 one pound containers $48.00, 25 pound drum $3.25 pound.

Advisory Service, write us.

**RELIANCE CHEMICALS CORPORATION**
**P.O. Box 6724, Dept. PQ Houston 5, Texas**

## CONCRETE PRODUCTS ENGINEER

Services of a man thoroughly familiar with the manufacture of concrete block and construction practices involved. Ability to speak and write technical and promotional articles. Part time traveling. Excellent opportunity. Give age, salary expected, photo and experience. Replies confidential.

**Box No. MO-606**
**c/o Pit and Quarry Publications**
**431 South Dearborn St. Chicago 5, Ill.**

## FOR SALE

Concrete block plant in Arkansas. Columbia equipped. Good backlog with excellent future potential. Trucks, steam kilns and two RR sidings. Out of town interests demand attention. $30,000 plus inventory.

**Box No. MO-607**
**c/o The Concrete Manufacturer**
**431 South Dearborn St. Chicago 5, Ill.**

## WANTED

USED EQUIPMENT FOR MAKING CONCRETE PIPE 4" to 18". MUST BE IN GOOD CONDITION.

**PHILIP SHANK**
**226 Orchard St. Sharon, Pa.**

## WANTED

One used "Victory" vibrapac bloc machine making one bloc per cyle

**BOX NO. MO-603**
**c/o The CONCRETE MANUFACTURER**
**431 S. Dearborn St. Chicago 5, Illinois**

## WANTED

Used Dwight-Lloyd Sintering Machine. Full details to:

**Box No. MO-610**
**c/o The Concrete Manufacturer**
431 S. Dearborn St. Chicago 5, Illinois

## MINERAL COLORS for BRICK MORTAR STUCCO-PLASTER-CONCRETE

*"Fine Because of Their Fineness"*
*Ask for samples and recommendations.*
**BLUE RIDGE TALC CO., INC.**
**HENRY, VIRGINIA**

## STOP that WATER

**With FORMULA NO. 640**

A clear liquid which penetrates 1" or more into concrete, brick, stucco, etc., seals—holds 1250 lbs. per sq. ft. hydrostatic pressure. Cuts costs: Applies quickly—no mixing—no cleanup—no furring—no membranes. Write for technical data—free sample.

**HAYNES PRODUCTS CO., OMAHA 3, NEBR.**

## WANTED

**FACE BLOCK MACHINE**

Must be in very good condition.

**Box No. MO-612**
**c/o The Concrete Manufacturer**
431 S. Dearborn St. Chicago 5, Ill.

## FOR SALE

1 used Erickson F5 Fork Truck. Good working condition.

**CAMPBELL SUPPLY CO.**
**Marquette, Michigan**

## FOR SALE

Approved washed cinder aggregate

**AGGREGATE PROCESSING AND CONTRACTING CO.**
**P. O. Box 38, Morgan Park Station**
**Duluth 8, Minnesota**

## WANTED

Used Besser — Dies to make Sewer Block and Man-Hole Block equipment.

**Box No. MO-611**
**c/o The Concrete Manufacturer**
431 S. Dearborn St. Chicago 5, Illinois

## WANTED

Interested in contacting companies who handle T or TT McCracken Concrete Pipe Machinery.

**Box No. MO-613**
**c/o CONCRETE MANUFACTURER**
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LOWER COST

**PACKER-HEAD WINGS**

Proved to last as long or longer—yet cost considerably less. Write for prices.

TEXAS FOUNDRIES
LUFKIN, TEXAS

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Five—5 H.P. Electric Motors, Stearns Brake Shoe for use, Besser Viprapac. Vibrating shaft and Drive; Screen cloth, 5/16", ½" square, ⅝", 3' x 4' and 4' x 5' Tyler Ty-rod. New.

**ROCK-CRETE CORPORATION**
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**FOR SALE**

Schmidgall block fork, Model 333, three prong, brand new, never been unerated. Cost $1,000.00, will sell for $600.00. FOB our plant.

**CONCRETE PRODUCTS COMPANY**
**39 Folly Road Charleston 50, S.C.**
**Phone 3-7241**

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**BLOCK PLANT FOR SALE**

Besser Unitized Master Vibrapac machine in good condition, complete with Mixer and Skip Loader, having a capacity of approximately 1500-8 x 8 x 16 blocks per 8 hour day.

**PLETTERY-NEDERHORST, INC.**
**10 Rockefeller Plaza New York 20, N.Y.**

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**STRADDLE CARRIER**

Hyster, 12,000 lb. capacity, 57" x 66". Excellent.

**WEBER & COMPANY**
**P.O. Box 8037 Chattanooga 11, Tenn.**
**Tels.: 9-8275 or 9-4685**

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**FOR SALE**

1-Quinn Model C, double tamper tile machine, size 14" thru 36" just rebuilt, with conveyor and mixer. New Quinn forms, slip strip type, with pallets 15", 18" and 30" size.

**FLORA CONCRETE PRODUCTS CO.**
FRED FRYE Phone 5401
**Flora, Indiana**

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**CEMENT COLORS**

Write for free samples and prices of "LANSCO" CEMENT COLORS produced in 34 attractive shades. Packed in bulk and in 1 lb. and 5 lb. packages.

*manufactured by*
**LANDERS-SEGAL COLOR CO.**
**71 Delevan St. Brooklyn 31, N. Y.**

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**FOR SALE**

Used & rebuilt block machines, mixers, pallets cored and plain, racks, skip loaders, compressors, etc.

**Box No. LU-505**
**c/o The Concrete Manufacturer**
**431 So. Dearborn Street Chicago 5, Illinois**

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**FOR SALE**

Clark Fork Lift Mdl. 6025 Stalwart — 168" Lift — 6000 lb. Reconditioned and excellent. Shovel Front — for Mdl. 700 P & H W/ Drum Spider. 1¼ yd. Complete.

**EDWARD R. GEE**
**P.O. Box 5575 Philadelphia 43, Pa.**
**Phone Granite 6-4790**

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# DEPENDABLE USED TRUCK MIXERS

## • SPECIAL SALE •

***These units fully reconditioned and guaranteed.***
***Newly Painted . . . High Tread Rubber***
***Priced below market value • F.O.B. Los Angeles***
***Act now for real savings!***

- 3½ Yard 1951 WADE Mixer mounted on 50 White COE, 9.00 x 20 tires, 2 speed rear axle (Stock #1768). A real steal for only $3995.
- 3 Yard 1951 WILLARD Mixer mounted on '51 Ford F-6. 2 speed rear axle, 8.25 x 20 tires (Stock #1731). Check this one at $2595.
- 3 Yard 1950 CHALLENGE Mixer mounted on '50 Ford F-6. 2 speed rear axle, 8.25 x 20 tires (Stock #1754). Full price $2850.
- 3 Yard 1950 CHALLENGE Mixer mounted on '49 Ford COE F-6. 2 speed axle, 8.25 x 20 tires (Stock #1709). A buy at $2395.
- 3 Yard 1950 WILLARD Mixer mounted on '50 Ford F-6 with 2 speed axle and 8.25 x 20 tires (Stock #1727). A real bargain for a fleet $2395.
- 3 Yard 1949 CHALLENGE Mixer mounted on '49 Ford F-8 145 h.p. with Eaton 2 speed axle, 9.00 x 20 tires (Stock #1796). Steep grades are easy for this one. Full, low price $2450.
- 3 Yard 1948 WILLARD Mixer mounted on '48 Ford V-8 F-6 with 2 speed axle and 8.25 x 20 tires (Stock #1726). Full price $1695.

***The Following Units in good operating condition priced for quick sale "AS IS."***

- 3 Yard 1950 CHALLENGE Mixer mounted on '50 Chevrolet 100 h.p. 2 speed axle, 8.25 x 20 tires (Stock #1876). Full price $1995.
- 3 Yard 1948 CHALLENGE Mixer mounted on '46 Ford 100 h.p. V-8. 2 speed axle, 8.25 front and 9.00 x 20 rear tires (Stock #1812). A good standby unit, now only $850.

## UNMOUNTED TRUCK MIXERS

- 5 Yard 1950 CHALLENGE Mixer fully reconditioned and guaranteed (Stock #1816). Full price only $2895.
- 3 Yard 1950 CHALLENGE Mixer fully reconditioned and guaranteed (Stock #1844). You can't beat this one for $1595.
- 3 Yard 1949 CHALLENGE Mixer fully reconditioned and guaranteed (Stock #1813). A good mixer for that extra pour to finish the job. Priced right! $1195.
- 3 Yard 1948 HOME MADE Mixer. Makes good concrete (Stock #1856). AS IS $495.
- 4½ Yard 1945 RANSOM Mixer (Stock #1643). AS IS for only $350.
- 3 Yard 1946 JAEGER Mixer (Stock #1300). AS IS $695.
- 4½ Yard 1946 JAEGER Mixers—10 units (Stock #1832). AS IS $395 ea.
- 4½ Yard 1946 REX Mixer. (Stock #1871). AS IS $395.
- 2 Yard 1945 SMITH Mixer (Stock #1702). AS IS $295.

## LIBERAL TERMS

**We handle our own contracts • Open Saturday and Sunday**

## COOK BROTHERS EQUIPMENT COMPANY

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# SHALEX AGGREGATE

*"Lightweight Aggregates with a future"*

**The Central Oregon Pumice Co.**
**125 Oregon Ave., Bend, Oregon**
**Plant Ph. 275—Office Ph. 166**

*(Write or call for further information)*

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**FOR SALE**

Ready-Mix Concrete Plant. Sand, Gravel Washing Plant. 7 rm. modern apartment overhead. Building 40' x 70'; Lot size 930' x 400'. Equipment, Transit Mixer, Dump Trucks, Office equipment. Gross yearly $80,000—Sales price $95,000. For more information write:

**MATTHEW F. KOLPAK**
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UNBREAKABLE

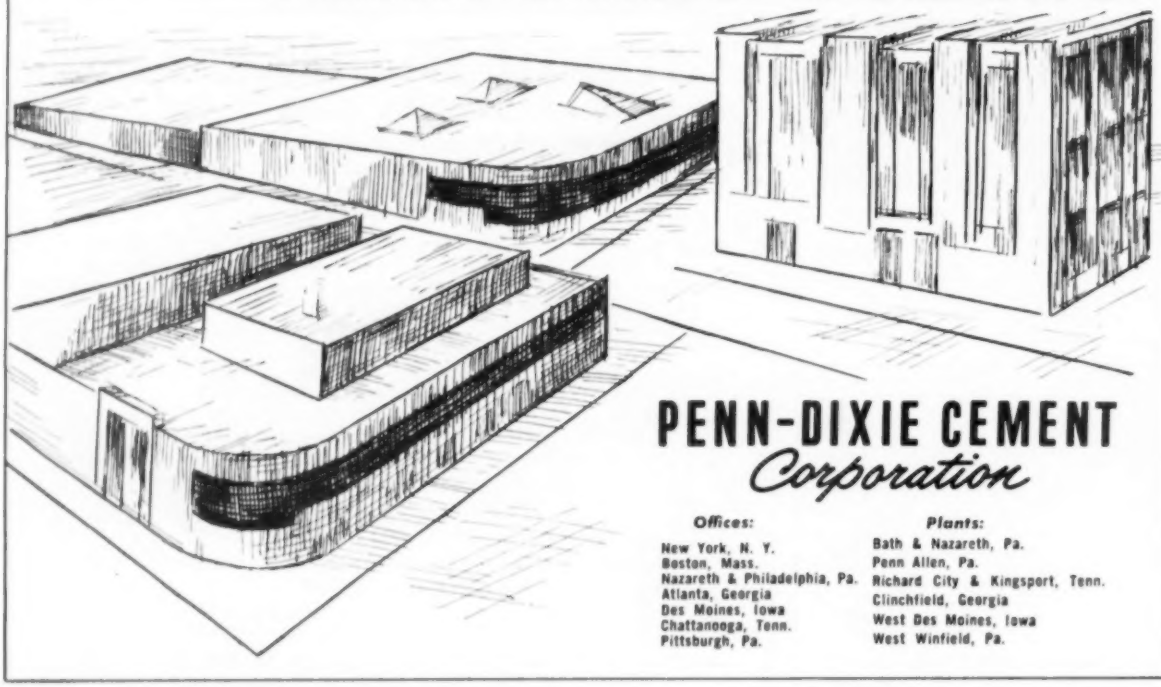
**PALLET RINGS**

Write for full information

TEXAS FOUNDRIES
LUFKIN, TEXAS

PENN-DIXIE
PORTLAND CEMENT

# PENN-DIXIE CEMENT



## PENN-DIXIE CEMENT
*Corporation*

**Offices:**
New York, N. Y.
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## Life-Long Septic Forms
**THE PRODUCTION LINE METHOD**

Offer you more profits with less effort. Our two weeks instructions practically guarantee your complete success from the start.

## Modern America

Must have either SEPTIC TANKS or sewers. We are here to sell you the finest septic tank forms. "LIFE-LONG"—the result of over 15 years experience.

***If profits of 100% plus interest you***

*Write for Data and Specifications*

## HOWELL-HOGAN

**BOX 206** **BRIDGEPORT, PENNA.**

*The Standard of the World*

**a rugged small truck**
**Model F-4R 4,000 lbs. capacity**

## HERE'S A NEW *Erickson*

For tricky ramps, rough or soft ground, cramped quarters—you will quickly become a booster for Erickson F-4R ease of handling, traction, balance, ruggedness. Comfortable seating space reduces operator fatigue. The F-4R is designed for more work per day—built for lower cost per year. Erickson quality is economy for you! Forks, mast and lift heights as ordered, twin tilt cylinders, 4 speeds forward, 4 speeds reverse. Side-shifter, scoop and other attachments available.

- Short Wheelbase & Turning Radius
- Complete Operator Vision
- Large 10-Ply Pneumatics
- 12" Center Underclearance
- Amazing Ease of Handling

*Send for Erickson Catalog on platform trucks to 7000 lbs. cap. and fork models 2000 to 20,000 lbs. cap.*

**ERICKSON POWER LIFT TRUCKS, Inc.**
1405 Marshall St. N.E. • Minneapolis 13, Minn.

*Erickson* THE WORKHORSE OF LIFT TRUCKS

# BICKERSTAFF BLOCK FORKS

**AUTOMATIC OR HYDRAULIC**

**THE BEST FORK FOR MECHANICAL CUBING**

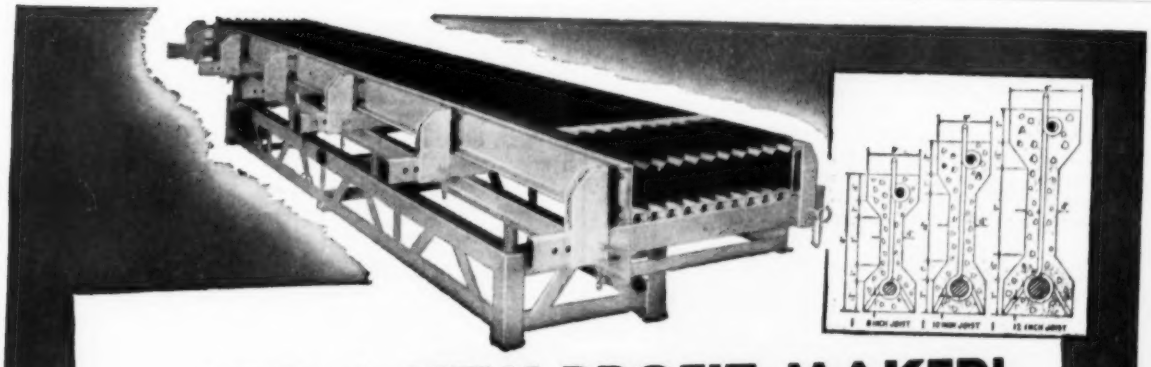
**ONE FORK HANDLES ALL SIZE BLOCK**

**ATTACHES TO ANY LIFT TRUCK**

## BICKERSTAFF INCORPORATED

*MANUFACTURERS OF MATERIAL HANDLING EQUIPMENT*

COLUMBUS, GEORGIA



# . . . ADD A NEW PROFIT-MAKER!

## INCREASE YOUR VOLUME

**Produce money-making concrete joists with the Kirk & Blum Heavy Duty Vibrating Table . . .**

***Only small investment required!***

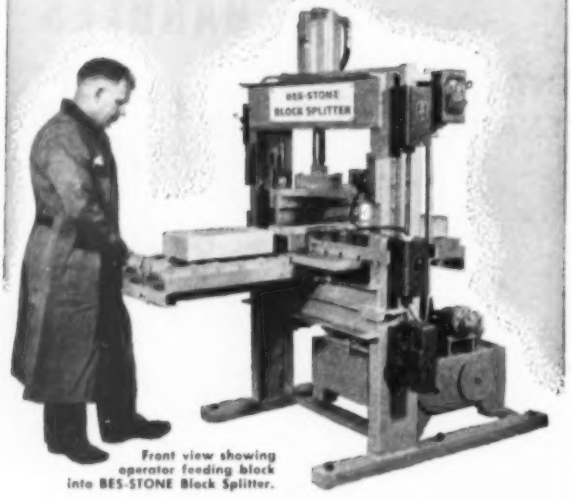
The addition of the Kirk & Blum Vibrating Table to your present equipment requires a very small initial cost, enables you to make an entirely new line of 8", 10" and 12" joists in 20 and 24 ft. lengths.

Cash in on the ever-growing demand for steel-reinforced concrete joists. Your experience and contacts in the building trade should make it easy to build up a profitable business in this new line. Concrete joists are simple to make, have unusual strength, are termite proof. The KIRK & BLUM Type "S" Heavy Duty Vibrating Table is capable of multi-production of concrete joists, allowing a fine profit-margin. Easily produced by unskilled operators. For complete details and prices, write to The Kirk & Blum Mfg. Co., 3112 Forrer Street, Cincinnati 9, Ohio.

**KIRK AND BLUM**

*Manufacturers of steel forms of all types . . . Curb, Gutter, Sewer, Road.*

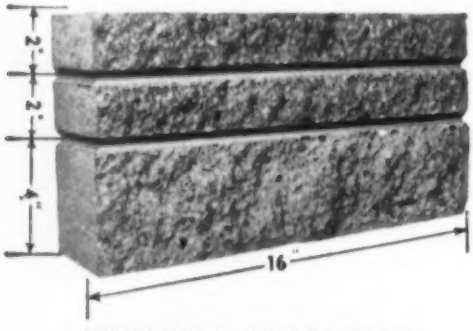
# BES-STONE BLOCK SPLITTER




Front view showing operator feeding block into BES-STONE Block Splitter.

- **Operates Automatically**
- **Produces 960 Split Block Per Hour**
- **Easily Adjusted for Various Heights**
- **Splits in a Straight Line — No Culls**
- **Has a Powerful Hydraulic Action**
- **Combines Quiet Operation with Safety**

Here is another Besser machine — the BES-STONE Block Splitter — designed primarily for the Concrete Products Industry. The machine splits block with speed and precision, in a variety of modular sizes. It's fully automatic. The block is placed under the knife automatically . . . the blade descends with a smooth, hydraulic action . . . and the split block is ejected by the incoming block. The operator is always at a safe distance. The BES-STONE Block Splitter enables plant operators to offer additional lines and affords new profit possibilities. Write for Bulletin No. 95A.




**BES-STONE in Modular Sizes**

BES-STONE, the product of the BES-STONE Block Splitter, is a new masonry unit with a split-stone appearance, made in many sizes and in a series of attractive, permanent colors. You'll find it complements, and greatly increases your sales of standard stripper block.

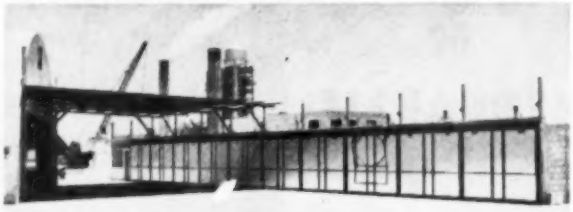
**BESSER**

*Complete Equipment for Concrete Products Plants*

**BESSER MFG. CO., ALPENA, MICH., U. S. A.**

A 7475-½P

## SAVE FUEL • REDUCE CURING TIME • CUT COSTS • UP PROFITS with *Standard* KILN DOORS!

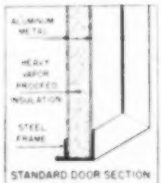


● This is the modern STANDARD kiln door installation of Portland Industries Inc., Riviera Beach, Florida. C. R. Wilson, the firm's Executive Vice President, writes: "Our Standard kiln doors have been very satisfactory."

To suit your individual requirements, three types of STANDARD kiln doors are available—the sliding carrier-type (shown above), the top hinge-type (which is pulled up by a hoist), and the side hinge-type.

**CHECK THESE FEATURES**

- √ **Heavy Aluminum Sheets on Both Sides of Thick Vapor Proofed Insulation.**
- √ **Rugged Steel Frame.**




STANDARD DOOR SECTION

*Get the Best — Send for Details Now*

**STANDARD DRY KILN COMPANY**

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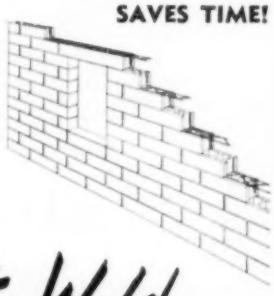
## It's the Backbone of Steel for EVERY Masonry Wall

**. . . because it LAYS FLAT, HANDLES FAST, CUTS COSTS and SAVES TIME!**

**Dur-O-wal's** plus features solve your reinforcing problems best. High tensile steel is electrically welded in a single plane to assure tight mortar joints and fast laying. Available in widths for all standard wall thicknesses, Dur-O-wal is fabricated in 10 foot lengths for easy storing and handling. Trussed design provides mechanical bond every eight inches; reinforces vertically and horizontally. Write, wire or phone plant nearest you. Dealers and distributors everywhere.



*Butt Weld*

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WITH TRUSSED *Design*

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Dur-O-Wal Div., Dept. 655
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P. O. Box 5446
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## Speed Up Hand Work
with the **BIG BULLY**
**AIR HAMMER**

- Clean Equipment
- Shape Dry Concrete
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Clean Fragile Mixing Equipment Safely
Speed Up Star Drilling

Weight only 50 oz., 6 in. length, fits hand easily. Exclusive metering trigger delivers 0 to 9000 blows per minute. 28 tools available for 100 different jobs. Special tools made at your request.

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**SYNTHETIC CONCENTRATED**

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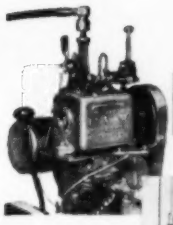
**CLASSIFIED SECTION**
**Is the Market Place**
**for your USED EQUIPMENT**



# POWERLIFT

*Now*

**truck-man INCREASES CAPACITY**
**FOR REAL BLOCK HANDLING ECONOMY**

Designed especially for and tested in Concrete Products Plants—the new Model DHP Heavy Duty Truck-Man with *Power Lift* is ready to start saving money for you. This new Truck-Man will handle a full 72 block rack with ease. (New rated capacity—4500 lbs.) *Power Lift* eliminates the back-breaking, time consuming task of raising the load—a flick of the wrist and it's on the way. Once load is raised from the floor, TAKE OFF—balance of lift can be made in transit. As much as a minute is saved each trip—more trips per day—more work with less effort. Oh, yes—all the regular Truck-Man advantages of the agile standard models are retained.

**FIVE OTHER VERSATILE MODELS**

**MODEL DH**—4500 lb. Skid Lift with hand pump

**MODEL DFP**—3000 lb. capacity, power lift Pallet Toter.

**MODEL DF**—Pallet Toter with hand pump (3000 lb. capacity).

**MODEL DT**—2000 lb. Platform Utility.

**MODEL DR**—Truc-Tor for cargo trains. Up to 6500 lbs. on dry, level concrete.

**TRUCK-MAN OWNERS**
**Convert your present Truck-Man trucks with the Packaged Power Lift Conversion Unit. New larger diameter lift cylinder and all other parts required by change are included. Easily and quickly installed.**

***Want to reduce your handling costs? Clip and mail this coupon today!***

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Sounds good, please send catalog and further information.

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# DIVIDENDS... in human lives

**BUSINESS EXECUTIVES!**

**CHECK THESE QUESTIONS**

If you can answer "yes" to most of them, you—and your company—are doing a needed job for the National Blood Program.

- ◯ HAVE YOU GIVEN YOUR EMPLOYEES TIME OFF TO MAKE BLOOD DONATIONS?
- ◯ HAS YOUR COMPANY GIVEN ANY RECOGNITION TO DONORS?
- ◯ DO YOU HAVE A BLOOD DONOR HONOR ROLL IN YOUR COMPANY?
- ◯ HAVE YOU ARRANGED TO HAVE A BLOOD-MOBILE MAKE REGULAR VISITS?
- ◯ HAS YOUR MANAGEMENT ENDORSED THE LOCAL BLOOD DONOR PROGRAM?
- ◯ HAVE YOU INFORMED EMPLOYEES OF YOUR COMPANY'S PLAN OF CO-OPERATION?
- ◯ WAS THIS INFORMATION GIVEN THROUGH PLAN BULLETIN OR HOUSE MAGAZINE?
- ◯ HAVE YOU CONDUCTED A DONOR PLEDGE CAMPAIGN IN YOUR COMPANY?
- ◯ HAVE YOU SET UP A LIST OF VOLUNTEERS SO THAT EFFICIENT PLANS CAN BE MADE FOR SCHEDULING DONORS?

Remember, as long as a **single** pint of blood may mean the difference between life and death for **any** American . . . the need for blood is **urgent!**

**NATIONAL BLOOD PROGRAM**

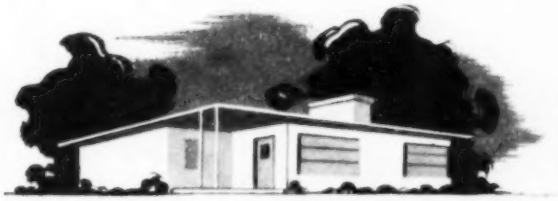
America's blood bank needs **more** blood, **now**. Be a regular depositor and know that your dividend is saving a life of some American—somewhere.

It may be a soldier shot down in battle, suffering from **shock**. Or someone here at home, sick and in dire need of new blood to restore life. A mother in childbirth, or a child in an accident.

America must give. America is **you**. Won't you call your Red Cross, Armed Forces or Community Blood Donor Center right now, for an appointment?

# GIVE BLOOD

...give it again and again



They will appreciate your suggestion of...

# Trinity White

The mass of dazzling white or the truer colors and tints made with Trinity white cement gives distinction to any structure—large or small. Your recommendation to use Trinity white will be appreciated and remembered by all concerned with that building.

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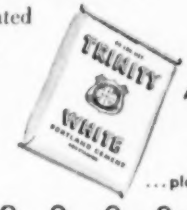
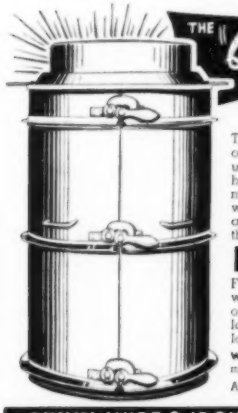



As white as snow

...plain or waterproofed



THE "Quinn Standard"

## FOR CONCRETE PIPE

The Quinn Standard is known as the best the world over, wherever concrete pipe is produced and used. Backed by over 35 years' service in the hands of hundreds of Quinn-educated contractors, municipal departments and pipe manufacturers who know from experience that **Quinn pipe forms** and **Quinn mixing formulas** combine to produce the finest concrete pipe at lowest cost.

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For making pipe by hand methods by either the wet or semi-dry processes. Built to give more years of service—sizes for pipe from 10" up to 120" and larger—tongue and groove or bell end pipe at lowest cost.

**WRITE TODAY.** Complete information, prices, and estimates sent on request.

Also manufacturers QUINN CONCRETE PIPE MACHINES

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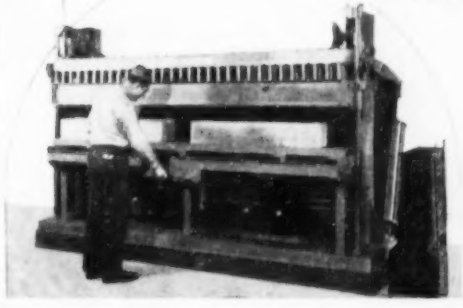
## Pre Caster



## *profits from hard to make units*

- Better than 100% markup on concrete units you can make on the new *PreCaster* . . . any shape that will strip through a straight box . . . such as lintels, slabs, highway guard rail posts, parking lot markers, joists, channel roof and floor slabs.
- Revolutionize your block business by these new avenues of volume and profit. . . . offering units to match the same beautiful texture of your regular blocks.
- Write today. Be the first in your market to offer quality only *PreCaster* can insure. Relatively low investment!

*Extra heavy* . . . stripper head frame of two heavy 2"x3" cold rolled steel bars.

Superb electrical vibration from two V-200 Syntron units.

Handles any aggregate.

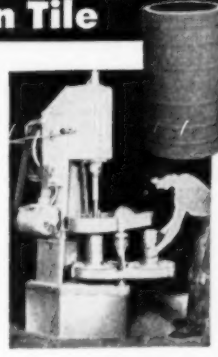
One man operation.

Makes units with 4" variations up to 10' long . . . lintels 4"x8" or 8"x8" up to 10' long.

Overall height 7'6".
Overall length 11'6".
Overall depth 4'0".
Shipping wt. 4620 lbs.

**PreCaster Inc. • 5209 Beech Street • Cincinnati 17**

## Make Money with Champion Cement Drain Tile



More millions of drain tile are needed to supply ever growing demand. The market is broad and profits are big.

The Champion makes the world's best drain tile. Densely compacted . . . ribbed for extra strength . . . every one truly concentric.

Champion machine is simple, compact and really rugged. Automatic feeder (optional) makes for 1-man operation. Write for literature—gives facts about the business and the equipment.

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**532 Ottawa Ave., Holland, Mich.**

**IT'S BIG · IT'S FACTUAL! · IT'S COMPLETE!**

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# CONCRETE INDUSTRIES YEARBOOK

***Largest in its History... incorporating all the latest available information on machinery equipment and processes***

*Thoroughly Re-edited—Pages of New Information*

Because of the rapid growth of the industry in the past few years, and the important technological developments which have accompanied that growth, the Yearbook has been re-edited from front cover to back. Pages of new information, drawn from the experiences of the industry's outstanding producers, have been added to make this edition more than ever the indispensable text book of the concrete field.

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*Two U.S. Patents have been allowed on Oswalt Improvements, one on the Synchronized Vibration, and the other on the Lug Link used in speed-up.*

# "....let's talk Turkey...."

## about Better Methods of Block Production

# OSWALT SERVICE
## FOR VIBRAPAC OPERATORS

OSWALT not only has the experience and "know-how" for completely servicing your Super-Vibrapac for greatly increased production, but also gives a definite guarantee on the results. Operation is tested and proven on the job to insure proper installation.

### *Oswalt features:*

1. Shock-free Block Ejector and Front End Pallet Feeder.
2. New Simplified Height and Density Control.
3. Improved Vibration and Machine Changes to speed-up.

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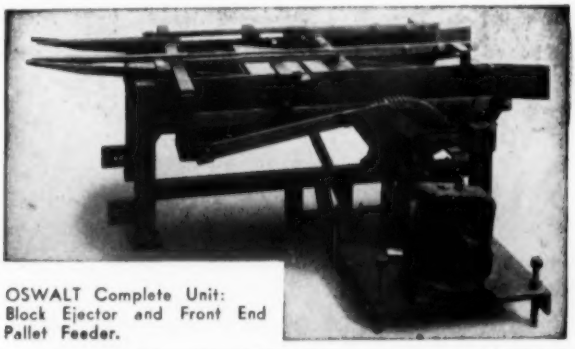

OSWALT Complete Unit: Block Ejector and Front End Pallet Feeder.

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Homeward all metal forms are precision built to produce a product that requires no hand finishing.

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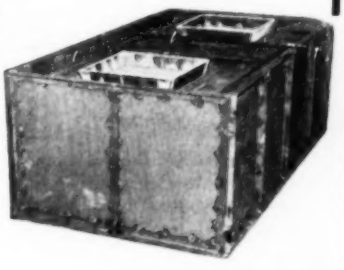
## *Use* CARPENTER . . .

Tank Forms and Handling Equipment for fast, economical production of quality septic tanks . . . an article demanded everywhere. ONE MAN operates our Delivery Rig . . . loads, transports, unloads. Satisfied customers from coast to coast.



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# SOFFIT BLOCK
(Filler for Floors and Roofs)
## Opens Up New Markets

- FIRESAFE
- PERMANENT
- RIGID
- ECONOMICAL

**Gives FLOORS and ROOFS Lifetime Permanence . . . Cuts Construction Costs!**

Your profits will greatly increase by making and selling Soffit Filler Block for floors and roofs. Soffit Block enables your customers to make an ENTIRE structure firesafe and permanent, and do it economically.

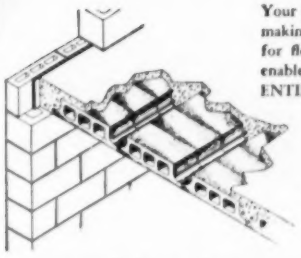
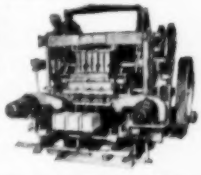


Illustration at left shows integral joist and slab of reinforced concrete. Meets standard building code requirements. Recommended by architects and builders.

## BESSER VIBRAPAC



Soffit Filler Block are made on the same machine that produces quality concrete load-bearing block for walls, in all styles and sizes, using one set of Plain Pallets. Write for literature and names of Vibrapac plants making Soffit Block.

**BESSER MANUFACTURING CO.**
ALPENA, MICHIGAN, U. S. A.
*Complete Equipment for Concrete Products Plants*

A-6031-¼ A

# Quality Block + Quality Walls...

## Your assurance of continued success

Building a successful concrete masonry business hinges on steadfast adherence to two practices:

**1.** Make block that comply with applicable specifications for strength, dryness and absorption.

**2.** Make sure your block produce quality walls —and floors. *The final customer buys walls and floors, not block.* He judges block on the basis of how they perform in the wall or floor.

Making quality block is your job. Making sure your block become quality walls is just as important to your success.

That's why most successful producers work with architects and builders to encourage good workmanship. They regularly visit jobs on which their block are being used to see that the principles of quality construction are being observed.

Quality block, plus quality walls and floors, are your best salesmen for future business. Send for a free copy of "*Concrete Masonry Handbook*," which contains recommended construction practices. It is distributed only in U. S. and Canada.

**PORTLAND CEMENT ASSOCIATION**
**Dept.A11-58, 33 West Grand Avenue, Chicago 10, Illinois**
A national organization to improve and extend the uses of portland cement and concrete . . . through scientific research and engineering field work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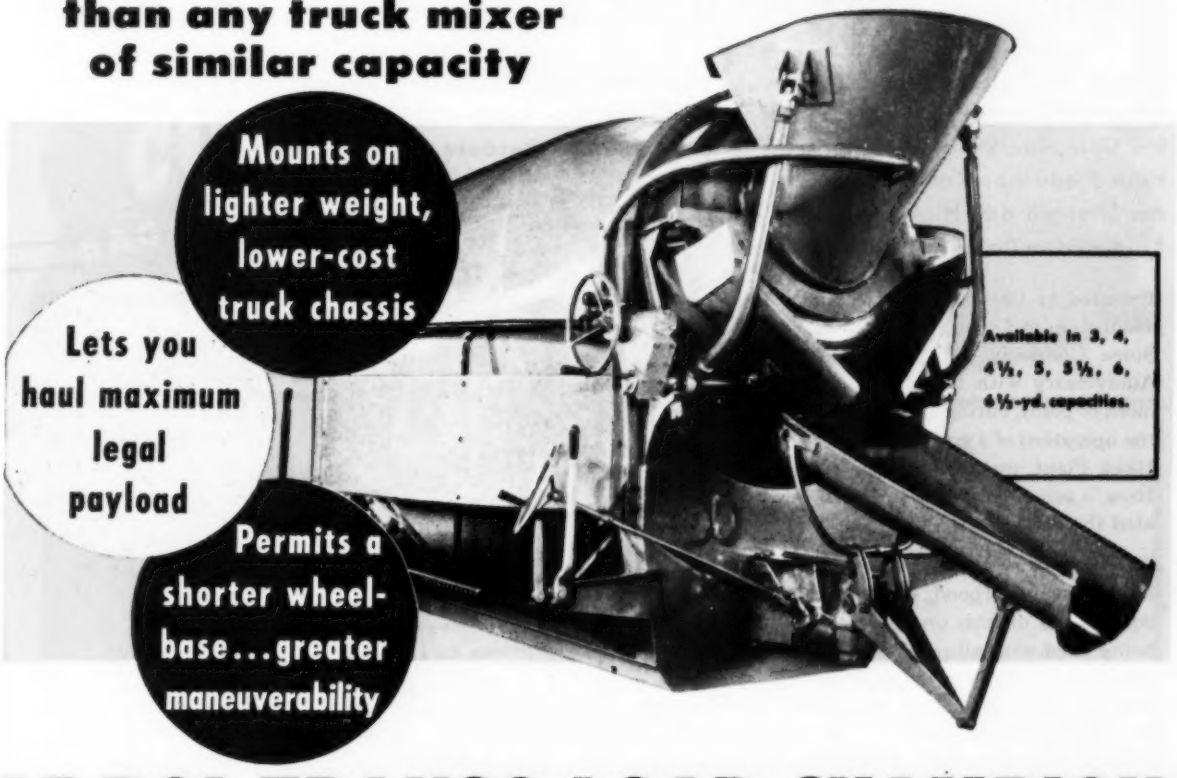
*See also Detailed Information in 1953 Pit and Quarry HANDBOOK and CONCRETE INDUSTRIES YEARBOOK

# Shorter and lighter!

**than any truck mixer of similar capacity**


Mounts on lighter weight, lower-cost truck chassis
Lets you haul maximum legal payload
Permits a shorter wheel-base...greater maneuverability
Available in 3, 4, 4½, 5, 5½, 6, 6½-yd. capacities.

# LE ROI-TRANSO LOAD CHAMPION

You carry full rated capacity within gross vehicle weight limits . . . make more round trips daily . . . and cut costs all around — with the Le Roi-Transo Load Champion.

Light weight and compactness are only two of the reasons why you enjoy such profitable performance. The patented Transo direct drive is another. It reduces non-productive dead-weight — eliminates ring gears, chains, and sprockets; thus cuts replacement and maintenance costs.

The Load Champion has many other equally practical features, other operating advantages. It has good mixing action. It loads fast. It discharges slump concrete speedily. It starts and discharge-reverses with a full load without shock.

Ask your Le Roi-Transo distributor to give you all the details. Or write for bulletin.

Le Roi-Transo DeLuxe Transo-mixer, 12" to 17" shorter than any other mixer-agitator of equal capacity—1,000 to 1,600 lbs. less dead-weight. 3, 4, 4½, 5, 5½, 6, 6½-yd. capacities. Available with fluid couplings or torque converters.

TRANSO DIVISION LE ROI

YD-11

**LE ROI COMPANY**

*Plants:* Milwaukee • Cleveland — Greenwich — Dunkirk, Ohio • Coldwater, Michigan.

A Subsidiary of Westinghouse Air Brake Co.

**TRANSO DIVISION**

3716 W. WISCONSIN AVE. • MILWAUKEE 8, WIS.

# STEARNS 15

## *"The Ultimate in Block-Producing Equipment"*

**Owner of Half-Century-Old, Dover, Ohio, Concrete Products Plant, after 35 Years' Profitable Experience with Stearns Equipment, Thus Describes His Complete Stearns 15 Plant, Installed a Year Ago, Because of Its Steady, High Production Rate, Endurance and the Strength and High Quality of Blocks Produced — Day after Day after Day.**

Founded in 1903 by the late James Rees in a small shop in Dover, Ohio, the E. J. Rees Cast Stone Company this year celebrated its 50th Anniversary with the renovation and enlargement of plant, curing system and equipment and the operation of a complete Stearns 15 Concrete Block Plant, installed last December. Ernest J. Rees, a son of the founder, has owned and operated the plant since 1923.

The company expects production this year to be in the neighborhood of 3,000,000 eight-inch equivalents on this one Stearns 15. Orders are being filled with all possible speed for hospitals, schools, churches and homes of the area. Leading concrete block engineers from Ohio, Michigan, W. Virginia and Kentucky, who have visited the plant, pronounce it one of the most modern in the country.

Established 1923

Telephone 24081

**E. J. REES CAST STONE COMPANY**

Manufacturers of
LIGHT WEIGHT INSULATING UNITS
CONCRETE BUILDING UNITS • PRE-CAST STONE

1120 North Tuscarawas Avenue
BOX 225
DOVER, OHIO

September 5, 1953

Stearns Manufacturing Company, Inc.
Adrian, Michigan

Gentlemen:

Almost a year ago we added a Stearns Model 15 equipped with magnetic offbearer and Stearns pallet return. We have been in the block manufacturing business for over 50 years, the last 35 of which we have dealt with Stearns Manufacturing Company. We feel that the Stearns 15 is the ultimate in block-producing equipment.

We average 900 8x8x16 blocks per hour and at the present time are running seven days per week. We feel that this is certainly an endurance test for this push button, automatic operation and find it passes very satisfactorily.

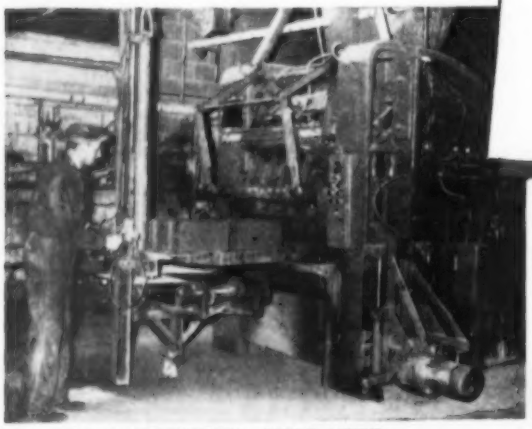
We are exceedingly pleased with the strength and type of block produced on this equipment, and I wish to commend you on the steady, high production rate achieved on this complete Stearns Model 15 plant.

Yours sincerely,

E. J. REES CAST STONE COMPANY

E. J. Rees, Owner

HOME OF VIBRATED BLOCKS



15—PLUS, PERFECT, VIBRATED BLOCKS PER MINUTE—900 per hour. That is the steady, day-in, day-out, production endurance record being made by this one-man, fully automatic, power-operated, push-button-controlled Stearns 15 Concrete Block Machine with power handling of plain pallets. Operating the Stearns Pneumatic Offbearer is William D. Smith, 20-year employee of the E. J. Rees Cast Stone Company.

PROUD OF THEIR 50-YEAR RECORD are, from left, E. J. Rees, owner of the Dover, Ohio, plant; Harry Overton, sales representative, and Miss Elvira Haug, office manager. The Rees Cast Stone Co. covers six acres.

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**MANUFACTURING COMPANY • INC**
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# CUT BAG PACKING COSTS

# AUGER-MATIC

# Bag Packer

Quickly fills self-closing bags to the desired weight. Saves time in filling and eliminates need for sewing or other expensive bag closing equipment.

The AUGER-MATIC Bag Packer has a multi-twist auger which can quickly be changed to pack any material from powder to pellets.

AUGER-MATIC Packing reduces dirt and waste . . . a time and labor saver. Packer can easily be moved from one filling point to another.

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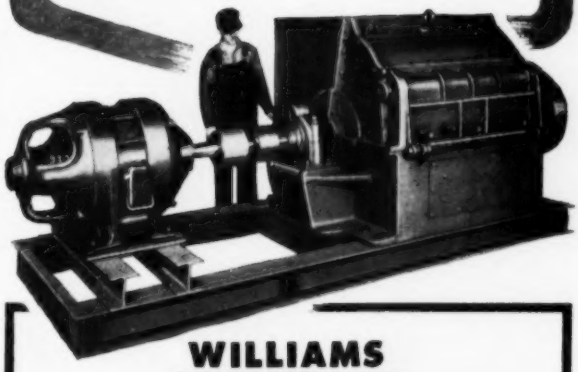
# Only One Operation To Crush 6" Stone To Agstone Or Smaller!



## WILLIAMS SECONDARY HAMMER MILLS

For speed and stepped-up output in reducing rock of 6" size to agstone — or down to 20 mesh if required — Williams secondary hammer mills are in a class by themselves! Capacities range up to 75 tons per hour. Hundreds of installations have proved them outstanding profit-makers!

Extremely heavy rib-reinforced construction — manganese steel liners and breaker plates — easy adjustment to compensate for wear — double duty hammers — metal trap for tramp iron — instant access for service — these and many other features make the low cost Williams Hammer Mills top paying investments!

**Many Sizes For Any Requirement**

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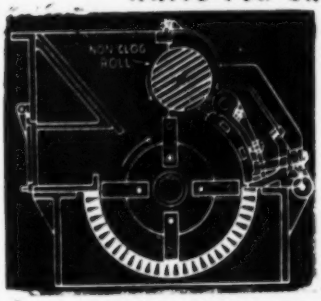


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The best way to handle wet, sticky clay or shale direct from pit for quick grinding without clogging. Roll is attached to hopper opening. Can be driven off main pulverizer shaft if desired.

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He is telling them familiar children's stories in their native tongue—stories now denied them by their Communist masters. These stories have a very real meaning to Karel's friends, a meaning ingrained in the folklore of their country.

Karel Paces is giving his friends, the boys and girls of his beloved Czechoslovakia, the truth of their own country and the free world. It is this truth which every American must support now so that it can be used to fight the deceit, darkness and despair which Communist tyranny is spreading through the satellite countries of Europe.

Day and night, Radio Free Europe is exposing Communist lies and propaganda, and sustaining the hope of oppressed millions that some day they will live in a better world.

At least $4,000,000 is needed this year to support and expand the operations of Radio Free Europe and Radio Free Asia. In addition, the Crusade for Freedom is seeking the signatures of Americans, on Freedom-Grams. These will be your personal pledges of hope for a free world.

This Crusade cannot succeed without your help. Your contribution is needed *now* to help support Radio Free Europe and Radio Free Asia . . . to help fight red lies with truth and to win the cold war.

Support this truth campaign now and help bring to millions the promise of future freedom.

*Send your contribution to Crusade for Freedom, c/o your local Postmaster*

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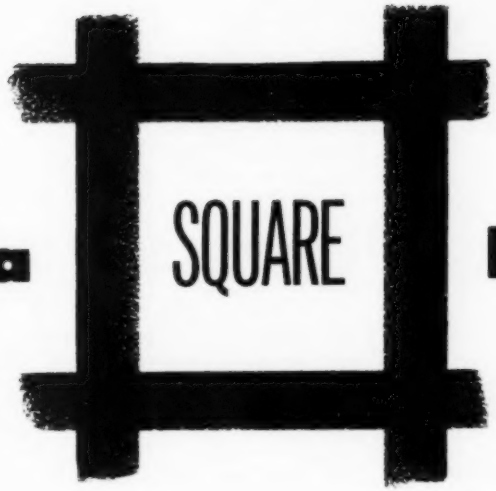


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Flat or corrugated Hendrick Perforated Metal is available in any desired shape and size of perforations in high carbon steel and stainless steels and other commercially rolled metals. Decks can be changed fast and efficiently – cutting time and labor costs.

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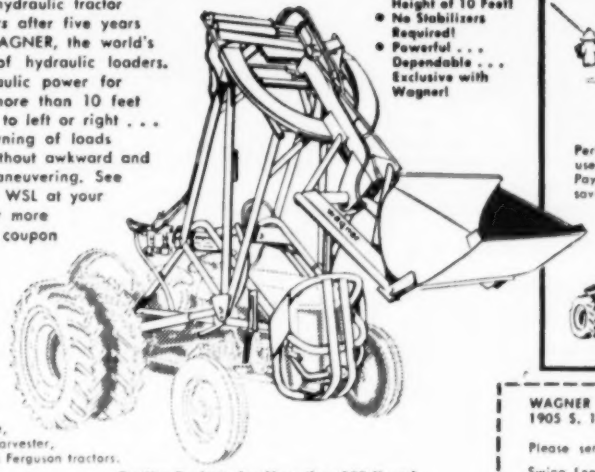

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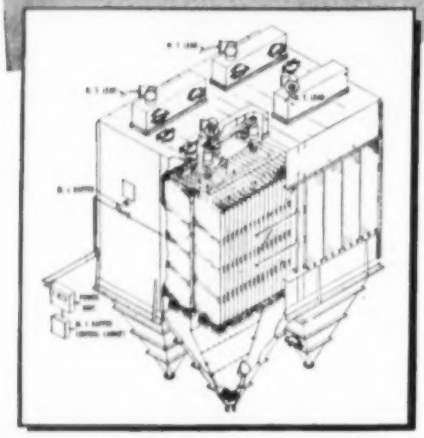
# ELIMINATES ALL FOUR...



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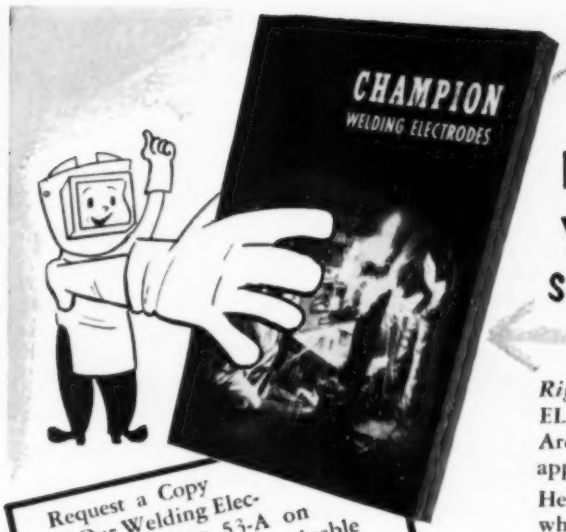


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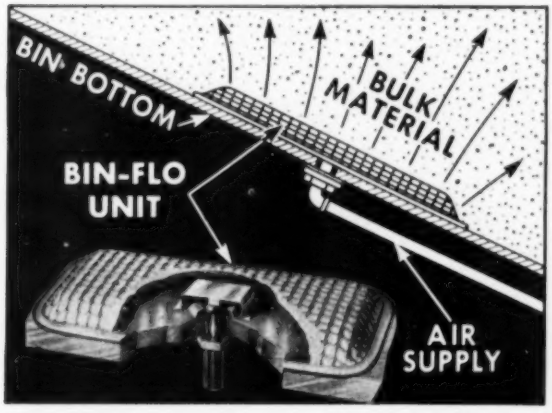


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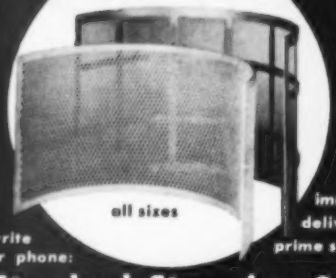

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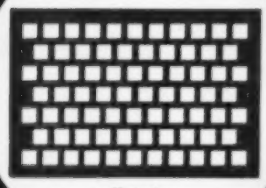

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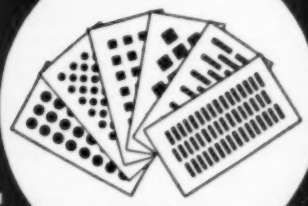

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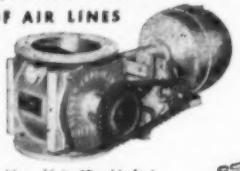

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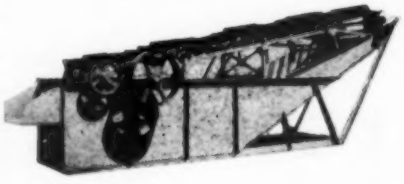

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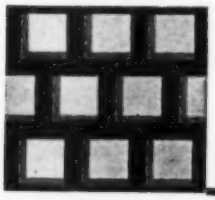

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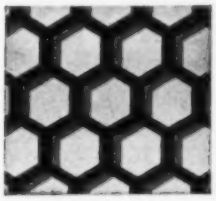

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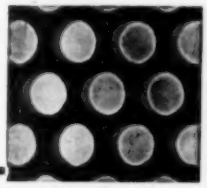

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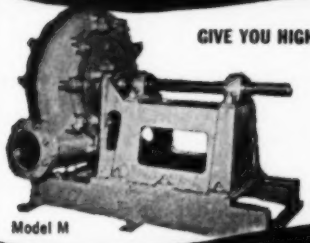

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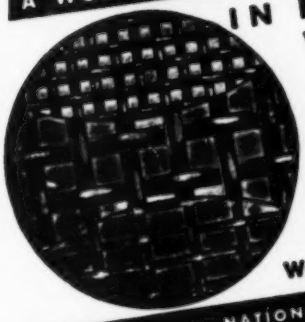

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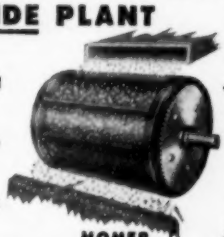

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*Crushing Plants*
*Cement Plants*
*Storage Methods*
*Operating Costs*

**E. Lee Heidenreich, Jr.**
***Consulting Engineer***
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Ph. FR 2-4186

*Operation*
*Plant Layout*
*Design*
*Construction*
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ANYWHERE
*We look into the earth*
**PENNSYLVANIA**
DRILLING COMPANY
PITTSBURGH 20, PA.

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**WANTED**
**MACHINERY OR PLANT**

Including Rotary Kilns, Direct Heat Dryers, Pulverizers, Crushers, Ball Mills, Vibrating Screens, Power Shovels and Cranes, Bucket Elevators, Conveyors, Filters, Diesel Engines.

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**WANTED**

Producer of Commercial stone to operate Quarry near Aiken, South Carolina. Quarry was furnishing stone Savannah River H-Bomb Project—Contract completed. Spur track—half million tons stone stripped. Hundred thousand tons ready for crusher. Water, electricity available. Foundations for crushers—Supply unlimited, passing specifications. Advantage in rates 6 counties and parts of others—Our concrete products plant uses four to five hundred tons daily. Territory good, thousand tons or more daily. ***Available at once.*** **Contact W. R. Carson, Southeastern Concrete Products Company, P.O. Box 337, Cayce, S.C. Phone 3-5993, Columbia, S.C.**

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***Consulting & Designing Engineers***

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CRUSHING PLANTS — STORAGE METHODS — REPORTS, SURVEYS

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We are looking for an experienced engineer to take complete charge of production and become an executive with one of the fastest growing organizations in the South. This is an unusual opportunity for a man completely familiar with quarry operations, including primary crushing, screening, and finished concrete products. Salary high plus bonus.

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**WANTED**

Loading Supervisor at large mine in Mediterranean Area. Excellent living conditions and climate. Age 30-40. Qualified to maintain, supervise, entire loading operations including rail transportation, loading into and from stockpile, marine transportation to cargo ship. Salary open. Free furnished house, medical and hospitalization. Non-contributory pension. Free school facilities through 13. Liberal vacations. Single status six months. Preference man with earth-moving construction experience. Require complete information and references. Photograph optional.

Box No. LU-501, c/o Pit and Quarry Publications, 431 S. Dearborn St., Chicago 5, Ill.

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**WANTED**

**A recently built, modern operation in Northern New York State is looking for a Graduate Engineer (preferably mechanical or chemical) with 5 to 10 years experience in the processing of non-metallic ores or the manufacture of Portland cement. Experience in plant layout and design, familiarity with material handling. Salary open—Reply giving references and resume of education and experience, and salary expected.**

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**CONSULTING ENGINEERS**
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**EQUIPMENT SPECIFICATION**
**LAYOUT**
**DESIGN**
**OPERATION**

***Specialized Engineering Services for Lime, Crushed Stone, Sand & Gravel and Other Non-Metallic Industries***

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**AIR COMPRESSORS,**
***Portable, 2-Stage***

500 cu. ft. Ing. Rand #40-T-29621, Mdl. K-500, 100# pressure, 6 cyl. Wauk.-Hesselman Diesel eng., Mdl. 6WAKH, 4 pneu. tires. Wt. 10,000#. $8,000.00.

315 cu. ft. Ing. Rand #370-A-100, 4 cyl. Waukesha gas eng., mtd. 4 steel wheels, $1,500.00.

160 cu. ft. Sullivan, power D4600 Cat. Diesel engine, on dual pneumatics.

**CAR PULLERS**

15 HP Mead Morrison #A-4015, Lincoln motor, 220/3/60, 15,000# @ 45 FPM. Excel. condition.

7½ HP Mead Morrison #952, 3/60/220, handle 1 to 5 loaded cars.

**CRANES, CRAWLER**

¾ yd. LS-85 Link Belt Crane, year 1946, Cat. D-4600 Diesel eng., 40′ boom, good operating condition.

1¼ yd. Bucyrus-Erie Mdl. 33-B Crane, Ser. 16502, 8 cyl. "V" type Le Roi gas eng., 50′ boom.

2½ yd. P&H Mdl. 955-LC, Ser. 5309, Cat. D-17000 Diesel eng., 100′ boom, 1½ KW light plant, tagline. Operate from cable or remote control 32′ hi tower. Ideal for pit, stripping, levee work, etc.

**CRANES, LOCOMOTIVE**

30 ton Mdl. F OHIO #3266, 50′ boom, oil fired, Nat'l. Bd. 200# boiler.

**GENERATORS—LIGHT PLANTS**

75 KW Diesel AC Generator, 220/440/60/3, Cat. D-13000 Diesel eng., complete with all controls and accessories. Generator completely rewound & unit excel. shape. Bargain.

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**BOILER, HORIZONTAL**

**125 HP Erie City Economic 100#, Natl. Board, 1250 sq. ft. heating surface, self-contained, excel. condition. Only $4,000. (Pitts.)**

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**1½ yd. Lorain Mdl. 77 #9163 Diesel Crane, D-13000 Cat. engine, 45′ to 85′ boom, 20′ jib. Wt. 80,000#. Special at $15,000. (Pitts.)**

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**20-Ton Terry Steel Erectors Guy Derrick, 115′ mast, 105′ boom, thoroughly rebuilt, perfect condition. A "steal" at $3,750. (Clifton Hts.)**

**15-TON STD. GA. GAS LOCOMOTIVE**

**15-Ton Vulcan Std. Ga. Locomotive, Ser. 3903, 6 cyl. Le Roi Mdl. JMS gas eng., yours for $1,500. (Chicago)**

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**28-S Jaeger Stationary Mixer, 25 HP electric, 220/440/60/3, 100 gal. water tank, rebuilt, excel. condition. $2,750.00. (Clifton Hts.)**

10 KW Continental Light Plant, Ser. 102, 120 volts, 3 phase single phase with 4 cyl. Continental gas engine #1869, wt. 1500#.

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2/Drum Lambert Steam Hoists, sizes 8½x10, 9x10, 10½x12. Excel. shape.

100 HP Single drum Jaeger, Mdl. LCT6, 6 cyl. Hercules gas eng., Twin Disc torque convertor, cap. from 3000# @ 350 FPM to 31,000#. Main drum reversible. Ideal for salvage work or heavy lifting. Wt. 11,500#.

2/Drum 100 HP American Gasoline Hoist, Waukesha gas engine, 10,000# @ 270 FPM.

**LOCOMOTIVES, 24″ & STD. GA.**

6 ton 24″ ga. Whitcomb, gasoline, Type MO #11438. A good buy.

16 ton Plymouth Std. Ga., Ser. 3819, JH6 Buda gas engine.

**PUMPS, ELECTRIC**

8″ Ing. Rand centrifugal pump, size 8 LFV, 50 HP 220/440/3/60 motor. Capacity 2,000 GPM @ 80′ head. Wt. 3500#. Only $850.00.

WE HAVE AN EXCELLENT STOCK OF PUMPS—GAS, ELECTRIC AND STEAM POWERED, ALL TYPES AND SIZES.

**HEATING EQUIPMENT**

*Boilers*—from 6 to 125 HP, portable, vertical & loco. type, hi or low pressure.

*Heat Machines—Space Heaters*—Complete line of heat machines, oil fired, new and used.

*Salamanders*—Oil Burning Salamanders, brand new, immediate shipment.

***All this equipment is owned by us and may be inspected at one of our show rooms.***

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1—7'x60' CALCINER, made by Struthers-Wells. 9/16" shell, Timken roller bearing supports, Farrel Birm. gear reducer, with V-belted AC motor, firing hood, seal ring. With Vanderwerp-Manitowoc Recuperator, in excellent condition.

1—7'x120' and 2—8'x120' Vulcan, with 5/8" shells.

1—6'6" I.D. x 12' Rotary Nodulizer or Furnace, 5/8" shell, Timken roller bearing rolls, ger reducer and motor drive, scraper conveyor, feeder, etc.

**ROTARY DRYERS:**

8—6' x 40', 5' x 40' Ruggles-Coles; 54" x 25' Class Xf-4 Ruggles-Coles, also 3—3' x 50', x 5' x 50', 6' x 60', 7' x 70' Direct Heat. Also 3—6' x 50' Louisville Rotary Steam Tube.

3—3' x 50' Rotary D. H. Dryers or Coolers.

6—Link Belt Roto-Louvre Dryers: #207-10 (2' x 7" x 10') #310-16, #503-10, #604-20, two #604-24.

**CRUSHERS:**

Jaw—2" x 6", 6" x 15" Sturtevant; 18" x 36" and 24" x 36" Farrel; 42" x 48" Traylor; Rolls: 42" x 16" Allis-Chalmers Type B; 24" x 32" Penna. single roll. Portable Plants—Cedar Rapids 1036-BBB; 2540-AAAA, 2036-AAA, also Pioneer with 30" x 42" primary and secondary crushers, all Diesel driven.

**PULVERIZERS:**

1—5 roll Raymond High Side.

6—#1, #0, #00, #000 Raymond Mills.

3—#0, #00, 8" Raymond Screen Mills.

2—#51 Raymond Imp Mills.

2—Mikro #2TH, #4TH.

**BALL AND TUBE MILLS:**

6—Hardinge Mills, 3' x 8", 5' x 22", 6' x 22", 8' x 48".

4—Tube Grinding Mills, made by Traylor E. & M. Co. Allentown, Pa. Silex lined, 4' x 13', 4'6" x 18'6", 5' x 22' and 5' x 20'.

8—Pebble Mills, porcelain lined; 3—6' dia. x 8'. 800 gals. each. 1—6' x 5', 3—5' x 4', each with ball charge.

**AIR SEPARATORS:**

2—Raymond 6' and 16' dia.; 1—8' Gayco; 1—16' Sturtevant.

**LIME HYDRATING PLANT:**

1—Complete Lime Hydrating Plant, incl. Kreitzer Hydrator, Raymond Pulverizer, Jeffrey Pulverizer, Hummer Screen, etc.

**VIBRATING SCREENS:**

3—Selectro 3' x 8' 2-deck; 1—3' x 8', 1-deck, all totally enclosed, heavy duty.

1—3' x 6' Colorado Iron Works, 1-deck.

2—4' x 10' Tyler Niagara, 2-decks.

8—Tyler Hummer, 3' x 5', 4' x 5', 4' x 10'. Also #38 4' x 10'.

**DORR CLASSIFIERS:**

2—2 stage Washing Classifiers, each with two rakes in tandem, in steel trough 26'6" long x 3' wide, with drives.

Only a Partial List. Send us your Inquiries for Shovels, Cranes, Draglines; Jaw, Gyratory and other Crushers; Symons and Telsmith Cones; complete Portable Crushing Plants; Rotary Kilns and Coolers; Air Compressors; Conveyors and FULL LINE OF CHEMICAL PROCESS EQUIPMENT.

***Our 36th Year***

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**15-16-17 Park Row, New York 38, N.Y.**

**BArclay 7-0600**

***We buy your idle equipment.***

## FOR RENT
### or contract—sub-contract

**1—1953 complete portable Cedar Rapids Junior Tandem crushing plant.**

**1—1953 complete portable aggregate washing plant. Accessory equipment available includes trucks, shovels, bulldozers and weighing scales.**

**Competent operating personnel supplied with the equipment.**

**Would consider sub-contracting from established producer or any other reasonable arrangement.**

**Will move anywhere immediately.**

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## *HARDSURFACED CRANKSHAFTS FOR SALE*

**ARCPLATED • Factory Standard Size**

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|---|---|---|
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| Buda— Model 6DCS1879 | 700.00 ea. | ..... |
| Caterpillar—D-7 | 191.78 ea. | $251.72 ea. |
| Caterpillar—D-8 | 234.44 ea. | 286.65 ea. |
| Cummins— Model H & NH | 174.64 ea. | 229.22 ea. |
| Cummins—Model L | 757.62 ea. | 947.02 ea. |
| International— UD-TD 9 | 102.24 ea. | 135.14 ea. |
| International— UD-TD 14 | 106.94 ea. | 141.36 ea. |
| International— UD-TD 18 | 154.17 ea. | 202.34 ea. |
| International— UD-TD 24 | 235.47 ea. | 309.04 ea. |
| Murphy Diesel— ME-20 | 207.22 ea. | 271.97 ea. |
| Waukesha—WAK | 257.19 ea. | 321.49 ea. |
| Waukesha—LRO | 649.32 ea. | .... |

**WE BUY USED, UNCRACKED CRANKSHAFTS — ANY UNDERSIZE**

***Write for Complete Information***

**AMERICAN CRANKSHAFT COMPANY**

CHARLOTTE 1, N. C.

**P. O. Box 1498 • Phone 2-1354**

***Registered Service-Mark. Patented Crankshaft reclamation process.**

## WANT TO BUY

2—600 to 1700 FT. AIR COMPRESSORS
2—PORTABLE CRUSHING PLANTS
1—36 x 48 or 42 x 48 JAW CRUSHER
1—3 FT. or 4 FT. CONE CRUSHER

**LESTAN**

**60 E. 42nd St. New York 17, N.Y.**

## WANTED

Information and price on used 40 inch roll crusher, also used bulk cement storage bins.

**BOX NO. MO-601**
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**431 S. Dearborn Street Chicago 5, Illinois**

## QUARRY WANTED

Want to buy small operating Quarry in good market area selling road rock and agstone—price range $25000 to $30000.

**BOX NO. LU-508, c/o PIT AND QUARRY**
**431 S. Dearborn St. Chicago, Ill.**

Precision Chemical Analysis of rare and common Minerals & Ores. Carbonate, Phosphate and Silicate Rocks.

**H. J. HALLOWELL**
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**323 Main St. Danbury, Conn.**

## CEMENT ENGINEER

40 years of age, 18 years experience in wet and dry process plants in various countries, seeks employment. Held positions as Chief Engineer and Works Manager with full responsibility for technical and commercial administration. Excellent record. Reply to:

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**431 South Dearborn St. Chicago 5, Ill.**

**GENERAL MAINTENANCE FOREMAN**

For Cement Mill, New York State. Give details, salary, and recent photograph.

**BOX NO. MO-608, c/o PIT AND QUARRY PUBLICATIONS**
**431 South Dearborn St., Chicago 5, Ill.**

Mechanical Engineer Grad. experienced in

**CEMENT PLANT ENGINEERING & DESIGN**

Former executive of large wet & dry process cement plant — overseas, seeks to join important Engineering Office in this line.

**BOX NO. MO-609, c/o PIT AND QUARRY PUBLICATIONS**
**431 S. Dearborn St. Chicago 5, Ill.**

## WANTED

2—Used electric motor driven Air Compressors, 800 CFM each at 100 P.S.I. with motor 400 volts, 3 phase, 60 cycle. Advise price, manuf., condition, location, serial numbers.

**MAHONEY-CLARKE, INC.**
**217 Pearl Street New York 38, N.Y.**

## DREDGING WANTED

**Have 10" suction—Powered by Cummins 225 HP.**

**Free estimates on your work.**

**McHUGH SAND & GRAVEL**

**Phone 4516 Blue Rapids, Kansas**

## IMMEDIATE DELIVERY

A-C Model HD-14 Tractor, completely rebuilt and guaranteed, with cable Bulldozer, very reasonable.

A-C Model HD-5G Endloader, rebuilt and guaranteed.

A-C Model AD-3 Motor Patrol, rebuilt and guaranteed.

LeTourneau Super C Tournapull, reasonable.

Buckeye Model 402 Ditcher, rebuilt, fair price.

A-C Model B Wheel Tractor, rebuilt and guaranteed, with new mowing attachment, low price.

Schield Bantam Truck Crane, good condition, very reasonable.

A-C Model HD-10W Tractor, completely rebuilt and guaranteed, with either hydraulic or cable bulldozer, very reasonable.

Case Industrial wheel tractor with Hough hydraulically controlled Endloader, clean, cheap.

Caterpillar D-6 Tractor with bulldozer, less than 500 hours, reasonably priced.

A-C HD-9 Tractor with inside mounted bulldozer and winch, good condition, reasonably priced.

1—Caterpillar D-8 Tractor with Bulldozer.

1-Adams 414 Motor Patrol.

1—La Plante Choate 14-18 Scraper.

1-International TD-14 Tractor with Bulldozer, Clean.

1-Caterpillar D-2 Tractor with Endloader, Cheap.

1—Caterpillar D-4 Endloader. Poor condition, very cheap.

1—Caterpillar RD-6 Tractor, very cheap.

2-International TD-9 Tractors with Bucyrus-Erie hydraulic Endloader, fair condition, cheap.

1-A-C Model HD-7W Tractor with Garwood hydraulic Bulldozer, reasonable.

**ILLINOIS Road Equipment Co.**
**1310 E. Jefferson St. — Dial 2-7709 — Springfield, Ill.**

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75 gearmotors ½ to 15 hp.
40 gear reducers ½ to 100 hp.
Motors ½ to 125 hp.
Overhead electric hoists, ½ to 1½ ton
Overhead air hoist, 3 ton 12' lift
Sullivan single drum 7½ hp. portable hoist
Ing. Rand double drum 5 hp. portable hoist
1½ hp. 110 volt winches, 500# capacity
Hunts double drum 50 hp. tandem hoist
Revolving dryer 3'x30'
Putnam lathe 20" swing, 5' center
Apron conveyors and belt feeders
Davis #1 vertical key seater
Ercolite transformer welder, 200 amps.
Silent chain drive, 200 hp. Link belt
Gruendler hammermill 24"x14"
Stedman B30 hammermill, 30"x24"
Pennsylvania 8XT-8 hammermill
Double crushing rolls, smooth, 24"x14"
Single & double roll coal crushers
Champion 1030 roller bearing jaw crusher
Sturtevant rotary Fine crusher, 200
American Standard Disintegrator, 24"
Electric carpullers and cranes
Single & Double deck Universal screens
Selectro single deck 4'x8' vibr. screens
Heavy duty single deck 6'x8' vibr. screens
Elevator parts: Buckets, chain, sprockets
Enclosed chain bucket elevator, 8"x43'
Enclosed chain bucket elevator, 16"x45'
Enclosed chain and belt type bucket elevators
Open inclined bucket elevator, 14"x60' Cont.
Open inclined elevator, 10"x45' on chain
New and used belt idlers, 14" to 42"
Conveyor pulleys, 12" to 54" dia. with drives
New and used conveyor belt, 12" to 36" wide
Gravity conveyor, gears, V pulleys, etc.
Bucket elevators and belt conveyors to sketch.

**G. A. UNVERZAGT & SONS**
**136 Colt St. Irvington, N. J.**

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## FOR SALE

Universal Model 3240 Portable Impact Master Complete with 3' x 12' Apron feeder and shovel loading hopper, grizzly and by pass chute. "V" belt drives, powered by Murphy ME-66, 5th wheel and dolly, air brakes. All mounted on 12 - 1000x20 pneumatic tires with complete inventory of space hammers, liners and wearing pacts to place mill in like new condition. This mill has produced only 250,000 cubic yards of stone. Price, $24,000.00.

Wisconsin Foundry & Machine Company Portable Secondary plant equipped with 3' x 10' Jigger 2 deck vibrating screen, 42" x 24" rolls, pneumatic tires, ratovator wheel, powered by ME-66 Purphy Power Unit. Overhauled last fall. Price $12,500.00.

Both of the above units are an exceptional buy and must be seen to be appreciated.

**ARTHUR OVERGAARD COMPANY**
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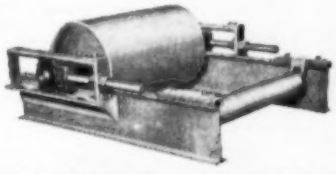
PHONE YOUR ORDER NOW. IMMEDIATE SHIPMENT FROM STOCK. COST OF PHONE CALL DEDUCTIBLE FROM INVOICE.

Using Bonded Pre-Fab Sections, your conveyor will look like this picture.

Standard Head & Tail Sections Complete (see picture below) or Pulleys Only, Take-up Units, Troughing or Picking Idlers, Belting, Motors & Drives.

HEAD SECTIONS include 20" diam. pulley mounted in 2-7/16" diam. shaft & bearings, in frame. TAIL SECTIONS include 16" diam. pulley mounted in 2-7/16" diam. shaft & take-up units in frame. Included with Head & Tail Sections is one 5" diam. Return Snubbing Idler.



**HEAD SECTIONS**

| Belt Width | Price |
|---|---|
| 16" | $176.00 |
| 18" | 182.00 |
| 24" | 193.00 |
| 30" | 204.00 |
| 36" | 237.00 |
| 48" | 265.00 |

**TAIL SECTIONS**

| Belt Width | Price |
|---|---|
| 16" | $218.00 |
| 18" | 221.00 |
| 24" | 237.00 |
| 30" | 246.00 |
| 36" | 268.00 |
| 48" | 293.00 |

**BONDED PRE-FAB 20' INTERMEDIATE SECTIONS**

Include four 5" roll diam. troughing or picking Idlers and two return Idlers. Frames are drilled to accept Idlers and fish plates are furnished, allowing you to bolt one or more sections together.

| Belt Width | Price (20' Sec.) | Belt Width | Price (20' Sec.) |
|---|---|---|---|
| 16" | $250.00 | 30" | $287.00 |
| 18" | 254.00 | 36" | 301.00 |
| 24" | 272.00 | 48" | 326.00 |

**TROUGHING IDLERS & RETURN ROLLS**

3-roll Troughing Idlers for these sizes:
16" belt..... $17.25 30" belt..... $19.50
18" belt..... 18.00 36" belt..... 20.25
24" belt..... 18.75 48" belt..... 21.75
1-roll Return Idlers for these sizes:
16" belt..... $6.75 30" belt..... $8.25
18" belt..... 7.13 36" belt..... 8.75
24" belt..... 7.50 48" belt..... 10.25

All steel. Interchangeable with other well known makes. Replaceable ball bearings. Rust proof ball braces; maintenance is negligible.

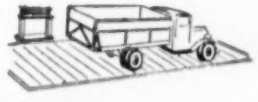
**CONVEYOR BELTING**

Famous brands at deep cut prices. Fresh stock.

| Width | Ply | Top Cover | Bottom Cover | Duck Carcass | Price |
|---|---|---|---|---|---|
| 18" | 4 | 1/8" | 1/32" | 28 oz. | 2.50/ft. |
| 24" | 4 | 1/8" | 1/32" | 28 oz. | 3.25/ft. |
| 30" | 4 | 1/8" | 1/32" | 28 oz. | 3.97/ft. |

*Write for Free Belting Sample*

**MOTOR TRUCK SCALES**



20 Ton Truck Scales ..... $525.00
30 Ton Truck Scales ..... 582.00
33 Ton Truck Scales ..... 625.00

Others to 50 ton capacity. All complete with structural steel weighbridge.

*Mfrs. of Scales, Conveyors, Conveyor Parts, Idlers, Vibrating Screens, Crushers and Feeders*

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WORLD'S LARGEST INVENTORY
NEW AND GUARANTEED REBUILT EQUIPMENT

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L. D. (Long Distance) 65
ROCHESTER 1, NEW YORK
**Explosion Proof Motor Headquarters**

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CRUSHERS: Diamond 10x40 jaw, 40x22 roll dual action, 10x36 Austin, 12x18 Acme, 15x24, 18x36 CR 15x36 Gruendler, 20x36 Univ. 25x40 CR, 24x36 Lipman, 24x50 Champion, 30x42 Univ. 48x36 Farrell 42x48 Traylor, 48x60 AC JAW, 19, 25, 37 Kennedy. 322R, 636R Allis. 10" & 14" McCully. 14" Traylor 16B, 26" & 25A Telsmith. 30" McCully GYR. AW 40x22 DBL ROLL. 2 & 3' Symons, 4' Traylor.
Two 3x8 CR & Univ. heavy duty Rock FEEDERS.
MILLS: Williams & Raymond 4 roll. Raymond 35" vertical., 6x12 Marcy, 4x15 Rod, 4x5 & 5x6 Ball. Link Belt sgl. drum HOIST 48" x 48" w/200 HP motor.
CRANES: 1½ yd. Link Belt K42 & K44. 1¾ yd. Osgood 80S.
DRAGLINES: Koehring 501, Link Belt L885, Lorain L501 & 820, P&H 1055LC & Northwest 95.
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| 12" | 4 | 1/16" | 1/32" | 28 Oz. |
| 14" | 4 | 1/16" | 1/32" | 28 Oz. |
| 16" | 4 | 1/8" | 1/32" | 28 Oz. |
| 18" | 4 | 1/8" | 1/32" | 28 Oz. |
| 20" | 4 | 1/8" | 1/32" | 28 Oz. |
| 20" | 5 | 1/8" | 1/32" | 28 Oz. |
| 24" | 4 | 1/8" | 1/32" | 28 Oz. |
| 24" | 5 | 1/8" | 1/32" | 28 Oz. |
| 26" | 5 | 1/8" | 1/32" | 28 Oz. |
| 30" | 4 | 1/8" | 1/16" | 32 Oz. |
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| 36" | 6 | 1/8" | 1/16" | 32 Oz. |
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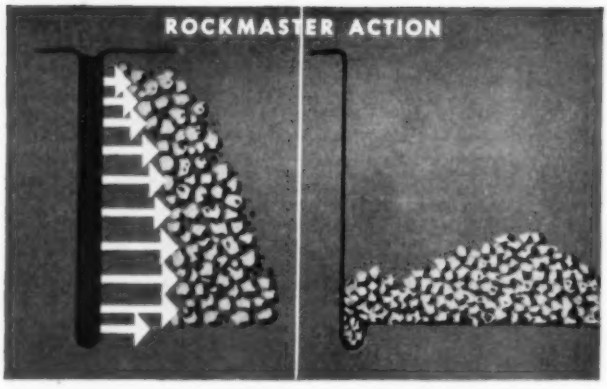


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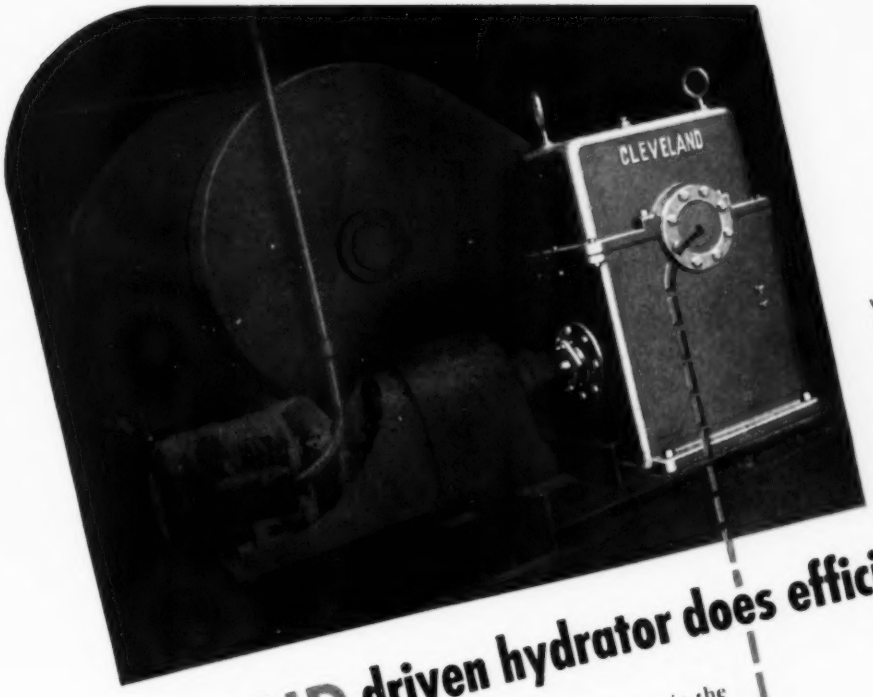


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Photo of automatic hydrator in midwestern lime plant by courtesy of Pit and Quarry.

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**CLEVELAND**
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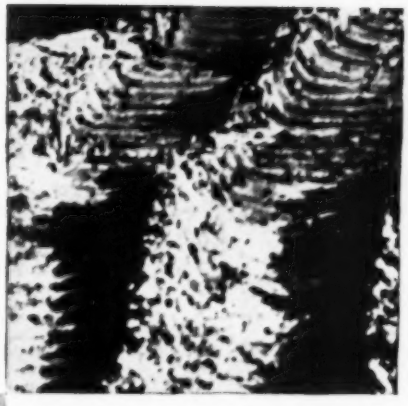
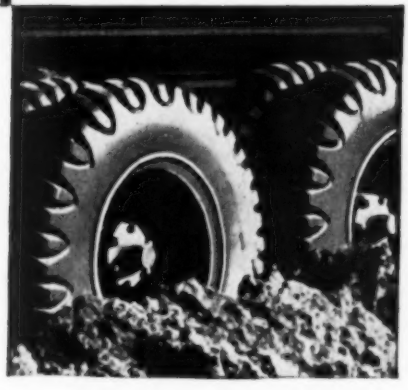
# THE TRACK  OF A

# Mack TELLS A

# STORY OF  Power

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